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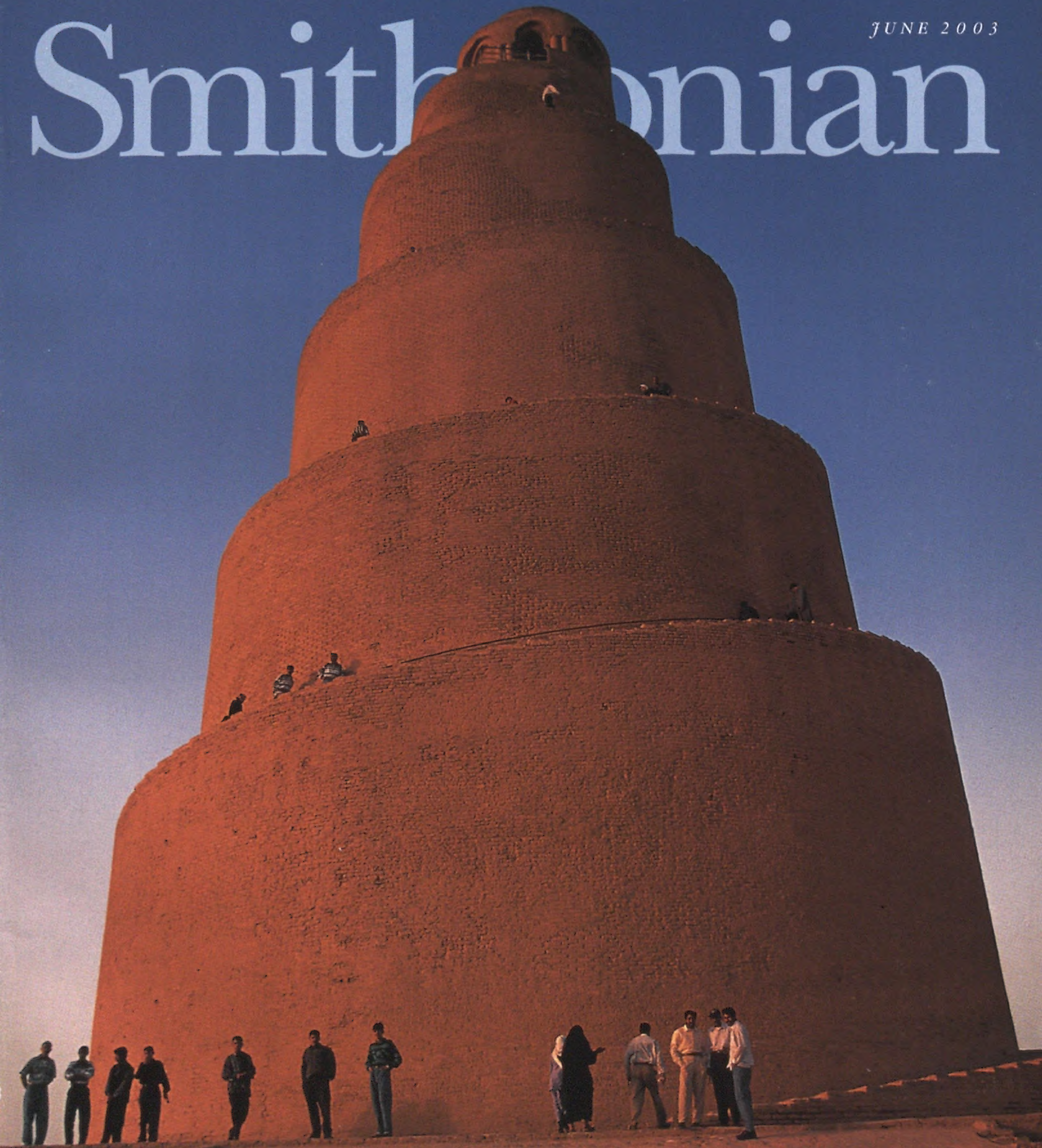

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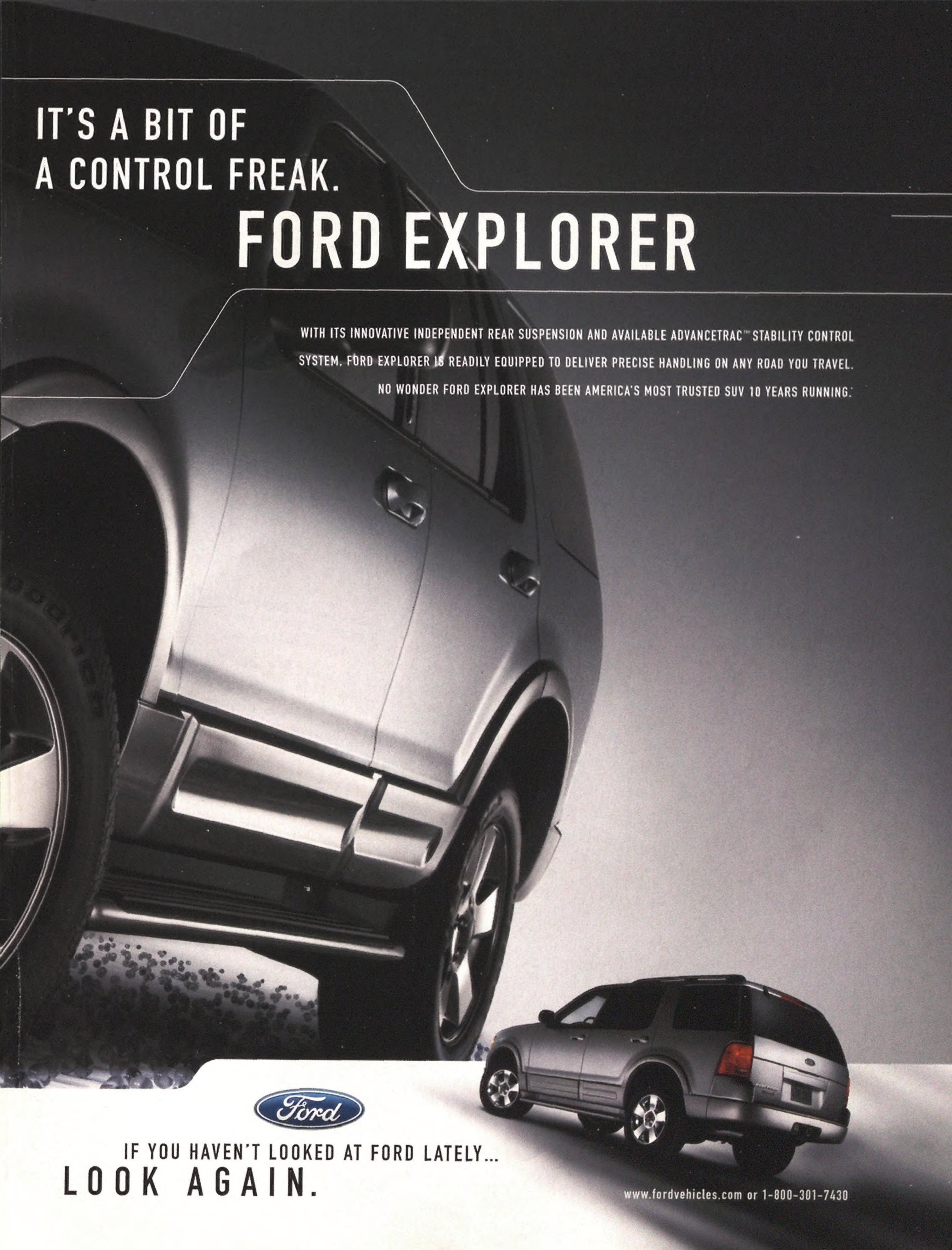

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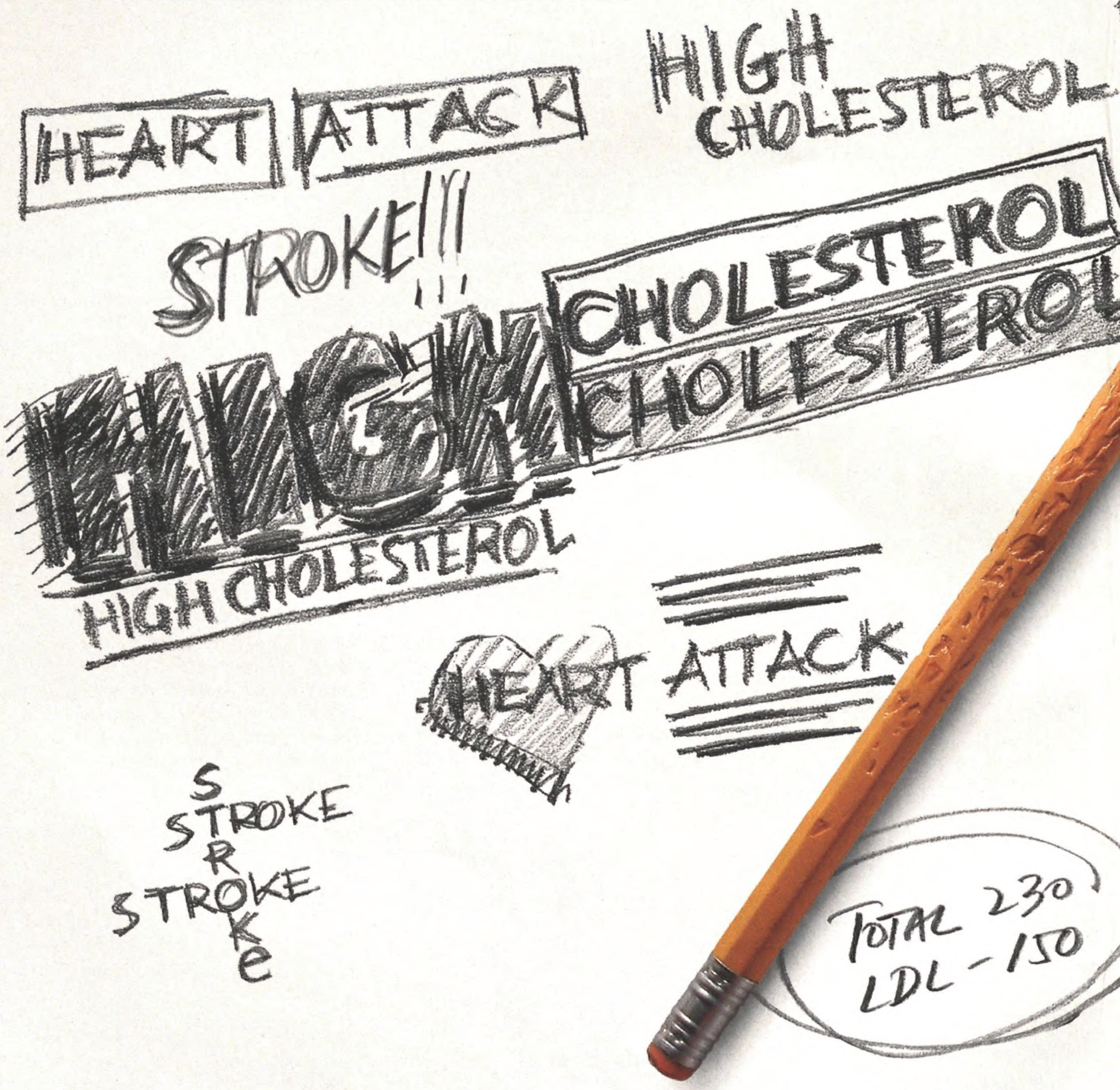

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FACT 1:

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Pravachol® (pravastatin sodium), a prescription drug, is not for everyone, including women who are pregnant or nursing or may become pregnant, or people with liver problems. And because serious side effects can result, tell your doctor about any unexplained muscle pain or weakness you experience while on Pravachol, and about any other medications you are taking. Your doctor may do blood tests to check for liver problems. Some mild side effects, such as slight rash or stomach upset, occur in 2-4% of patients.

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Brief Summary of Prescribing Information. For complete prescribing information, please consult official package circular.

CONTRAINDICATIONS: Hypersensitivity to any component of this medication. Active liver disease or unexplained, persistent elevations in liver function tests (see **WARNINGS**). *Pregnancy and lactation.* Atherosclerosis is a chronic process and discontinuation of lipid-lowering drugs during pregnancy should have little impact on the outcome of long-term therapy of primary hypercholesterolemia. Cholesterol and other products of cholesterol biosynthesis are essential components for fetal development (including synthesis of steroids and cell membranes). Since HMG-CoA reductase inhibitors decrease cholesterol synthesis and possibly the synthesis of other biologically active substances derived from cholesterol, they are contraindicated during pregnancy and in nursing mothers. **Pravastatin should be administered to women of childbearing age only when such patients are highly unlikely to conceive and have been informed of the potential hazards.** If the patient becomes pregnant while taking this class of drug, therapy should be discontinued immediately and the patient apprised of the potential hazard to the fetus (see **PRECAUTIONS: Pregnancy**).

WARNINGS: Liver Enzymes: HMG-CoA reductase inhibitors, like some other lipid-lowering therapies, have been associated with biochemical abnormalities of liver function. In three long-term (4.8-5.9 years), placebo-controlled clinical trials (WOS, LIPID, CARE; see **CLINICAL PHARMACOLOGY: Clinical Studies**), 19,592 subjects (19,768 randomized), were exposed to pravastatin or placebo. In an analysis of serum transaminase values (ALT, AST), incidences of marked abnormalities were compared between the pravastatin and placebo treatment groups; a marked abnormality was defined as a post-treatment test value greater than three times the upper limit of normal for subjects with pretreatment values less than or equal to the upper limit of normal, or four times the pretreatment value for subjects with pretreatment values greater than the upper limit of normal but less than 1.5 times the upper limit of normal. Marked abnormalities of ALT or AST occurred with similar low frequency (≤1.2%) in both treatment groups. Overall, clinical trial experience showed that liver function test abnormalities observed during pravastatin therapy were usually asymptomatic, not associated with cholestasis, and did not appear to be related to treatment duration. **It is recommended that liver function tests be performed prior to the initiation of therapy, prior to the elevation of the dose, and when otherwise clinically indicated.** Active liver disease or unexplained persistent transaminase elevations are contraindications to the use of pravastatin (see **CONTRAINDICATIONS**). Caution should be exercised when pravastatin is administered to patients who have a recent history of liver disease, have signs that may suggest liver disease (e.g., unexplained aminotransferase elevations, jaundice), or are heavy users of alcohol (see **CLINICAL PHARMACOLOGY: Pharmacokinetics/Metabolism**). Such patients should be closely monitored, started at the lower end of the recommended dosing range, and titrated to the desired therapeutic effect. Patients who develop increased transaminase levels or signs and symptoms of liver disease should be monitored with a second liver function evaluation to confirm the finding and be followed thereafter with frequent liver function tests until the abnormality(ies) return to normal. Should an increase in AST or ALT of three times the upper limit of normal or greater persist, withdrawal of pravastatin therapy is recommended. **Skeletal *Muscle: Rare cases of rhabdomyolysis with acute renal failure secondary to myoglobinuria have been reported with* pravastatin and other drugs in this class.** Uncomplicated myalgia has also been reported in pravastatin-treated patients (see **ADVERSE REACTIONS**). Myopathy, defined as muscle aching or muscle weakness in conjunction with increases in creatine phosphokinase (CPK) values to greater than 10 times the upper normal limit, was rare (<0.1%) in pravastatin clinical trials. Myopathy should be considered in any patient with diffuse myalgias, muscle tenderness or weakness, and/or marked elevation of CPK. Patients should be advised to report promptly unexplained muscle pain, tenderness or weakness, particularly if accompanied by malaise or fever. **Pravastatin therapy should be discontinued if markedly elevated CPK levels occur or myopathy is diagnosed *or suspected. Pravastatin therapy should also be temporarily withheld in any patient experiencing an acute or serious* condition predisposing to the development of renal failure secondary to rhabdomyolysis, e.g., sepsis; hypotension; major surgery; trauma; severe metabolic, endocrine, or electrolyte disorders; or uncontrolled epilepsy.** The risk of myopathy during treatment with another HMG-CoA reductase inhibitor is increased with concurrent therapy with either erythromycin, cyclosporine, niacin, or fibrates. However, neither myopathy nor significant increases in CPK levels have been observed in three reports involving a total of 100 post-transplant patients (24 renal and 76 cardiac) treated for up to two years concurrently with pravastatin 10-40 mg and cyclosporine. Some of these patients also received other concomitant immunosuppressive therapies. Further, in clinical trials *involving small numbers of patients who were treated concurrently with pravastatin and niacin, there were no reports of myopathy.* Also, myopathy was not reported in a trial of combination pravastatin (40 mg/day) and gemfibrozil (1200 mg/day), although 4 of 75 patients on the combination showed marked CPK elevations versus one of 73 patients receiving placebo. There was a trend toward more frequent CPK elevations and patient withdrawals due to musculoskeletal symptoms in the group receiving combined treatment as compared with the groups receiving placebo, gemfibrozil, or pravastatin monotherapy (see **PRECAUTIONS: Drug Interactions**). **The use of fibrates alone may occasionally be associated with myopathy. The combined use of pravastatin and fibrates should be avoided unless the benefit of further alterations in lipid levels is likely to outweigh the increased risk of this drug combination.**

PRECAUTIONS: General: PRAVACHOL may elevate creatine phosphokinase and transaminase levels (see **ADVERSE REACTIONS**). This should be considered in the differential diagnosis of chest pain in a patient on therapy with pravastatin. *Homozygous Familial Hypercholesterolemia.* Pravastatin has not been evaluated in patients with rare homozygous familial hypercholesterolemia. In this group of patients, it has been reported that HMG-CoA reductase inhibitors are less effective because the patients lack functional LDL receptors. *Renal Insufficiency.* A single 20 mg oral dose of pravastatin was administered to 24 patients with varying degrees of renal impairment (as determined by creatinine clearance). No effect was observed on the pharmacokinetics of pravastatin or its 3α-hydroxy isomeric metabolite (SQ 31,906). A small increase was seen in mean AUC values and half-life ($t_{1/2}$) for the inactive enzymatic ring hydroxylation metabolite (SQ 31,945). Given this small sample size, the dosage administered, and the degree of individual variability, patients with renal impairment who are receiving pravastatin should be closely monitored. **Information for Patients:** *Patients should be advised to report promptly unexplained muscle pain, tenderness or weakness, particularly if accompanied by malaise or fever* (see **WARNINGS: Skeletal Muscle**). **Drug Interactions: *Immunosuppressive Drugs, Gemfibrozil, Niacin (Nicotinic Acid), Erythromycin:*** See **WARNINGS: Skeletal Muscle**. *Cytochrome P450 3A4 Inhibitors: In vitro and in vivo* data indicate that pravastatin is not metabolized by cytochrome P450 3A4 to a clinically significant extent. This has been shown in studies with known cytochrome P450 3A4 inhibitors (see diltiazem and itraconazole below). Other examples of cytochrome P450 3A4 inhibitors include ketoconazole, mibefradil, and erythromycin. *Diltiazem* – Steady-state levels of diltiazem (a known, weak inhibitor of P450 3A4) had no effect on the pharmacokinetics of pravastatin. In this study, the AUC and C_{max} of another HMG-CoA reductase inhibitor which is known to be metabolized by cytochrome P450 3A4 increased by factors of 3.6 and 4.3, respectively. *Itraconazole* – The mean AUC and C_{max} for pravastatin were increased by factors of 1.7 and 2.5, respectively, when given with itraconazole (a potent P450 3A4 inhibitor which also inhibits p-glycoprotein transport) as compared to placebo. The mean $t_{1/2}$ was not affected by itraconazole, suggesting that the relatively small increases in C_{max} and AUC were due solely to increased bioavailability rather than a decrease in clearance, consistent with inhibition of p-glycoprotein transport by itraconazole. This drug transport system is thought to affect bioavailability and excretion of HMG-CoA reductase inhibitors, including pravastatin. The AUC and C_{max} of another HMG-CoA reductase inhibitor which is known to be metabolized by cytochrome P450 3A4 increased by factors of 19 and 17, respectively, when given with itraconazole. *Antipyrine:* Since concomitant administration of pravastatin had no effect on the clearance of antipyrine, interactions with other drugs metabolized via the same hepatic cytochrome isozymes are not expected. *Cholestyramine/Colestipol:* Concomitant administration resulted in an approximately 40 to 50% decrease in the mean AUC of pravastatin. However, when pravastatin was administered 1 hour before or 4 hours after cholestyramine or 1 hour before colestipol and a standard meal, there was no clinically significant decrease in bioavailability or therapeutic effect. (See **DOSAGE AND ADMINISTRATION: Concomitant Therapy**.) *Warfarin:* Concomitant administration of 40 mg pravastatin had no clinically significant effect on prothrombin time when administered in a study to normal elderly subjects who were stabilized on warfarin. *Cimetidine:* The $AUC_{0\text{-}12\ hr}$ for pravastatin when given with cimetidine was not significantly different from the AUC for pravastatin when given alone. A significant difference was observed between the AUC's for pravastatin when given with cimetidine compared to when administered with antacid. *Digoxin:* In a crossover trial involving 18 healthy male subjects given 20 mg pravastatin and 0.2 mg digoxin concurrently for 9 days, the bioavailability parameters of digoxin were not affected. The AUC of pravastatin tended to increase, but the overall bioavailability of pravastatin plus its metabolites SQ 31,906 and SQ 31,945 was not altered. *Cyclosporine:* Some investigators have measured cyclosporine levels in patients on pravastatin (up to 20 mg), and to date, these results indicate no clinically meaningful elevations in cyclosporine levels. In one single-dose study, pravastatin levels were found to be increased in cardiac transplant patients receiving cyclosporine. *Gemfibrozil:* In a crossover study in 20 healthy male volunteers given concomitant single doses of pravastatin and gemfibrozil, there was a significant decrease in urinary excretion and protein binding of pravastatin. In addition, there was a significant increase in AUC, C_{max}, and T_{max} for the pravastatin metabolite SQ 31,906. Combination therapy with pravastatin and gemfibrozil is generally not recommended. (See **WARNINGS: Skeletal Muscle**.) In interaction studies with *aspirin, antacids* (1 hour prior to PRAVACHOL), *cimetidine, nicotinic acid,* or *probucol,* no statistically significant differences in bioavailability were seen when PRAVACHOL was administered. **Endocrine Function:** HMG-CoA reductase inhibitors interfere with cholesterol synthesis and lower circulating cholesterol levels and, as such, might theoretically blunt adrenal or gonadal steroid hormone production. Results of clinical trials with pravastatin in males and post-menopausal females were inconsistent with regard to possible effects of the drug on basal steroid hormone levels. In a study of 21 males, the mean testosterone response to human chorionic gonadotropin was significantly reduced ($p<0.004$) after 16 weeks of treatment with 40 mg of pravastatin. However, the percentage of patients showing a ≥50% rise in plasma testosterone after human chorionic gonadotropin stimulation did not change significantly after therapy in these patients. The effects of HMG-CoA reductase inhibitors on spermatogenesis and fertility have not been studied in adequate numbers of patients. The effects, if any, of pravastatin on the pituitary-gonadal axis in pre-menopausal females are unknown. Patients treated with pravastatin who display clinical evidence of endocrine dysfunction should be evaluated appropriately. Caution should also be exercised if an HMG-CoA reductase inhibitor or other agent used to lower cholesterol levels is administered to patients also receiving other drugs (e.g., ketoconazole, spironolactone, cimetidine) that may diminish the levels or activity of steroid hormones. **CNS Toxicity:** CNS vascular lesions, characterized by perivascular hemorrhage and edema and *mononuclear cell infiltration of perivascular spaces, were seen in dogs treated with pravastatin at a dose of 25 mg/kg/day.* These effects in dogs were observed at approximately 59 times the human dose of 80 mg/day, based on AUC. Similar CNS vascular lesions have been observed with several other drugs in this class. A chemically similar drug in this class produced optic nerve degeneration (Wallerian degeneration of retinogeniculate fibers) in clinically normal dogs in a dose-dependent fashion starting at 60 mg/kg/day, a dose that produced mean plasma drug levels about 30 times higher than the mean drug level in humans taking the highest recommended dose (as measured by total enzyme inhibitory activity). This same drug also produced vestibulocochlear Wallerian-like degeneration and retinal ganglion cell chromatolysis in dogs treated for 14 weeks at 180 mg/kg/day, a dose which resulted in a mean *plasma drug level similar to that seen with the 60 mg/kg/day dose.* **Carcinogenesis, Mutagenesis, *Impairment of* Fertility:** Please see Full Prescribing Information. **Pregnancy: Pregnancy Category X.** See **CONTRAINDICATIONS**. Safety in pregnant women has not been established. Pravastatin was not teratogenic in rats at doses up to 1000 mg/kg daily or in rabbits at doses of up to 50 mg/kg daily. These doses resulted in 10x (rabbit) or 120x (rat) the human exposure based on surface area ($mg/meter^2$). Rare reports of congenital anomalies have been received following intrauterine exposure to other HMG-CoA reductase inhibitors. In a review[1] of approximately 100 prospectively followed pregnancies in women exposed to simvastatin or lovastatin, the incidences of congenital anomalies, spontaneous abortions and fetal deaths/stillbirths did not exceed what would be expected in the general population. The number of cases is adequate only to exclude a three-to-four-fold increase in congenital anomalies over the background incidence. In 89% of the prospectively followed pregnancies, drug treatment was initiated prior to pregnancy and was discontinued at some point in the first trimester when pregnancy was identified. As safety in pregnant women has not been established and there is no apparent benefit to therapy with PRAVACHOL (pravastatin sodium) during pregnancy (see **CONTRAINDICATIONS**), treatment should be immediately discontinued as soon as pregnancy is recognized. PRAVACHOL should be administered to women of child-bearing potential only when such patients are highly unlikely to conceive and have been informed of the potential hazards. **Nursing Mothers:** A small amount of pravastatin is excreted in human breast milk. Because of the potential for serious adverse reactions in nursing infants, women taking PRAVACHOL should not nurse (see **CONTRAINDICATIONS**). **Pediatric Use:** Safety and effectiveness in individuals less than 18 years old have not been established. Hence, treatment in patients less than 18 years old is not recommended at this time. **Geriatric Use:** Two secondary prevention trials with pravastatin (*CARE* and *LIPID*) included a total of 6,593 subjects treated with pravastatin 40 mg for periods ranging up to 6 years. Across these two studies, 36.1% of pravastatin subjects were aged 65 and older and 0.8% were aged 75 and older. The beneficial effect of pravastatin in elderly subjects in reducing cardiovascular *events and in modifying lipid profiles was similar to that seen in younger subjects. The adverse event profile in the elderly was* similar to that in the overall population. Other reported clinical experience has not identified differences in responses to pravastatin between elderly and younger patients. Mean pravastatin AUCs are slightly (25-50%) higher in elderly subjects than in healthy young subjects, but mean C_{max}, T_{max} and $t_{1/2}$ values are similar in both age groups and substantial accumulation of pravastatin would not be expected in the elderly (see **CLINICAL PHARMACOLOGY: Pharmacokinetics/Metabolism**).

ADVERSE REACTIONS: Pravastatin is generally well tolerated; adverse reactions have usually been mild and transient. In 4-month long placebo-controlled trials, 1.7% of pravastatin-treated patients and 1.2% of placebo-treated patients were discontinued from treatment because of adverse experiences attributed to study drug therapy; this difference was not statistically significant. (See also **PRECAUTIONS: Geriatric Use** section.)

Adverse Clinical Events: Short-Term Controlled Trials: All adverse clinical events (regardless of attribution) reported in more than 2% of pravastatin-treated patients in placebo-controlled trials of up to four months duration are identified in the table below; also shown are the percentages of patients in whom these medical events were believed to be related or possibly related to the drug:

Adverse Events in >2 Percent of Patients Treated with Pravastatin 10-40 mg in Short-Term Placebo-Controlled Trials

	All Events		Events Attributed to Study Drug	
Body System/Event	**Pravastatin (N = 900) % of patients**	**Placebo (N = 411) % of patients**	**Pravastatin (N = 900) % of patients**	**Placebo (N = 411) % of patients**
Cardiovascular				
Cardiac Chest Pain	4.0	3.4	0.1	0.0
Dermatologic				
Rash	4.0*	1.1	1.3	0.9
Gastrointestinal				
Nausea/Vomiting	7.3	7.1	2.9	3.4
Diarrhea	6.2	5.6	2.0	1.9
Abdominal Pain	5.4	6.9	2.0	3.9
Constipation	4.0	7.1	2.4	5.1
Flatulence	3.3	3.6	2.7	3.4
Heartburn	2.9	1.9	2.0	0.7
General				
Fatigue	3.8	3.4	1.9	1.0
Chest Pain	3.7	1.9	0.3	0.2
Influenza	2.4*	0.7	0.0	0.0
Musculoskeletal				
Localized Pain	10.0	9.0	1.4	1.5
Myalgia	2.7	1.0	0.6	0.0
Nervous System				
Headache	6.2	3.9	1.7*	0.2
Dizziness	3.3	3.2	1.0	0.5
Renal/Genitourinary				
Urinary Abnormality	2.4	2.9	0.7	1.2
Respiratory				
Common Cold	7.0	6.3	0.0	0.0
Rhinitis	4.0	4.1	0.1	0.0
Cough	2.6	1.7	0.1	0.0

*Statistically significantly different from placebo.

The safety and tolerability of PRAVACHOL at a dose of 80 mg in two controlled trials with a mean exposure of 8.6 months was similar to that of PRAVACHOL at lower doses except that 4 out of 464 patients taking 80 mg of pravastatin had a single elevation of CK >10x ULN compared to 0 out of 115 patients taking 40 mg of pravastatin.

Long-Term Controlled Morbidity and Mortality Trials: Adverse event data were pooled from seven double-blind, placebo-controlled trials (West of Scotland Coronary Prevention study [WOS]; Cholesterol and Recurrent Events study [CARE]; Long-term Intervention with Pravastatin in Ischemic Disease study [LIPID]; Pravastatin Limitation of Atherosclerosis in the Coronary Arteries study [PLAC I]; Pravastatin, Lipids and Atherosclerosis in the Carotids study [PLAC II]; Regression Growth Evaluation Statin Study [REGRESS]; and Kuopio Atherosclerosis Prevention Study [KAPS]) involving a total of 10,764 patients treated with pravastatin 40 mg and 10,719 patients treated with placebo. The safety and tolerability profile in the pravastatin group was comparable to that of the placebo group. Patients were exposed to pravastatin for a mean of 4.0 to 5.1 years in WOS, CARE, and LIPID and 1.9 to 2.9 years in PLAC I, PLAC II, KAPS, and REGRESS. In these long-term trials, the most common reasons for discontinuation were mild, non-specific gastrointestinal complaints. Collectively, these seven trials represent 47,613 patient-years of exposure to pravastatin. Events believed to be of probable, possible, or uncertain relationship to study drug, occurring in at least 1% of patients treated with pravastatin in these studies are identified as follows: **Adverse Events in ≥1 Percent of Patients Treated with Pravastatin 40 mg in Long-Term Placebo-Controlled Trials [Pravastatin (N = 10,764) % of patients vs. Placebo (N = 10,719) % of patients] in each Body System/Event** *Cardiovascular:* Angina Pectoris (3.1 vs. 3.4); *Dermatologic:* Rash (2.1 vs. 2.2); *Gastrointestinal:* Dyspepsia/Heartburn (3.5 vs. 3.7); Abdominal Pain (2.4 vs. 2.5); Nausea/Vomiting (1.6 vs. 1.6); Flatulence (1.2 vs. 1.1); Constipation (1.2 vs. 1.3); *General:* Fatigue (3.4 vs. 3.3); Chest Pain (2.6 vs. 2.6); *Musculoskeletal:* Musculoskeletal Pain (includes arthralgia) (6.0 vs. 5.8); Muscle Cramp (2.0 vs. 1.8); Myalgia (1.4 vs. 1.4); *Nervous System:* Dizziness (2.2 vs. 2.1); Headache (1.9 vs. 1.8); Sleep Disturbance (1.0 vs. 0.9); Depression (1.0 vs. 1.0); Anxiety/Nervousness (1.0 vs. 1.2); *Renal/Genitourinary:* Urinary Abnormality (includes dysuria, frequency, nocturia) (1.0 vs. 0.8); *Respiratory:* Dyspnea (1.6 vs. 1.6); Upper Respiratory Infection (1.3 vs. 1.3); Cough (1.0 vs. 1.0); *Special Senses:* Vision Disturbance (includes blurred vision, *diplopia*) (1.6 vs. 1.3).

Events of probable, possible, or uncertain relationship to study drug that occurred in <1.0% of pravastatin-treated patients in the long-term trials included the following; frequencies were similar in placebo-treated patients: *Dermatologic:* pruritus, dermatitis, *dryness of skin, scalp hair abnormality (including alopecia), urticaria. Endocrine/Metabolic: sexual dysfunction, libido change. Gastrointestinal:* decreased appetite. *General:* fever, flushing. *Immunologic:* allergy, edema head/neck. *Musculoskeletal:* muscle weakness. *Nervous System:* paresthesia, vertigo, insomnia, memory impairment, tremor, neuropathy (including peripheral neuropathy). *Special Senses:* lens opacity, taste disturbance. **Postmarketing Experience:** In addition to the events reported above, as with other drugs in this class, the following events have been reported rarely during postmarketing experience with PRAVACHOL (pravastatin sodium), regardless of causality assessment: *Musculoskeletal:* myopathy, rhabdomyolysis. *Nervous System:* dysfunction of certain cranial nerves (including alteration of taste, impairment of extra- ocular movement, facial paresis), peripheral nerve palsy. *Hypersensitivity:* anaphylaxis, lupus erythematosus-like syndrome, polymyalgia rheumatica, dermatomyositis, vasculitis, purpura, hemolytic anemia, positive ANA, ESR increase, arthritis, arthralgia, asthenia, photosensitivity, chills, malaise, toxic epidermal necrolysis, erythema multiforme, including Stevens-Johnson syndrome. *Gastrointestinal:* pancreatitis, *hepatitis, including chronic active hepatitis, cholestatic jaundice, fatty change in liver, cirrhosis, fulminant hepatic necrosis,* hepatoma. *Dermatologic:* A variety of skin changes (e.g., nodules, discoloration, dryness of mucous membranes, changes to hair/nails). *Reproductive:* gynecomastia. *Laboratory Abnormalities:* elevated alkaline phosphatase, and bilirubin; thyroid function abnormalities. **Laboratory Test Abnormalities:** Increases in serum transaminase (ALT, AST) values and CPK have been observed (see **WARNINGS**). Transient, asymptomatic eosinophilia has been reported. Eosinophil counts usually returned to normal despite continued therapy. Anemia, thrombocytopenia, and leukopenia have been reported with HMG-CoA reductase inhibitors. **Concomitant Therapy:** Pravastatin has been administered concurrently with cholestyramine, colestipol, nicotinic acid, probucol and gemfibrozil. Preliminary data suggest that the addition of either probucol or gemfibrozil to therapy with lovastatin or pravastatin is **not** associated with greater reduction in LDL-cholesterol than that achieved with lovastatin or pravastatin alone. No adverse reactions unique to the combination or in addition to those previously reported for each drug alone have been reported. Myopathy and rhabdomyolysis (with or without acute renal failure) have been reported when another HMG-CoA reductase inhibitor was used in combination with immunosuppressive drugs, gemfibrozil, erythromycin, or lipid-lowering doses of nicotinic acid. Concomitant therapy with HMG-CoA reductase inhibitors and these agents is generally not recommended. (See **WARNINGS: Skeletal Muscle** and **PRECAUTIONS: Drug Interactions**.)

OVERDOSAGE: To date, there has been limited experience with overdosage of pravastatin. If an overdose occurs, it should be treated symptomatically with laboratory monitoring and supportive measures should be instituted as required. (See **WARNINGS**.)

REFERENCE: [1]Manson JM, Freyssinges C, Ducrocq MB, Stephenson WP. Postmarketing Surveillance of Lovastatin and Simvastatin Exposure During Pregnancy. *Reproductive Toxicology* 10(6):439-446, 1996.

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FEATURES

"SIX DAYS OUT OF SEATTLE in Skagway, the Harriman party confronted the gritty reality of the Klondike gold rush. During an outing on the new White Pass Railroad, the scientists saw carcasses of horses frozen on the rugged trail."
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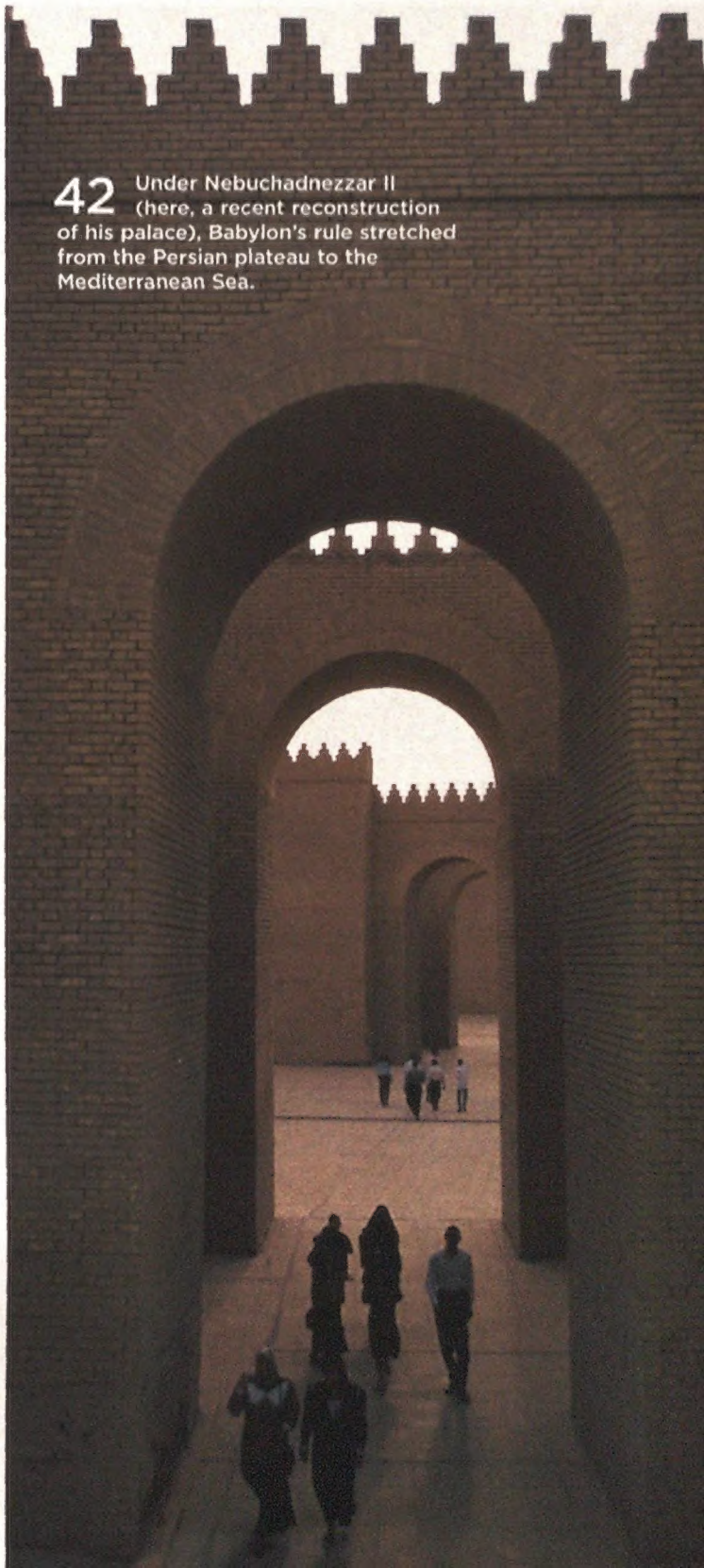
In 1899, a team of experts assembled by industrialist E. H. Harriman set out to explore the Alaska coast on a voyage still hailed as a scientific milestone
BY KEN CHOWDER

ON THE COVER The 1,200-year-old spiral minaret of the Great Mosque of Samarra, 80 miles northwest of Baghdad, is a towering example of early Islamic architecture. *PHOTOGRAPH BY MICHAEL YAMASHITA.*



42 Under Nebuchadnezzar II (here, a recent reconstruction of his palace), Babylon's rule stretched from the Persian plateau to the Mediterranean Sea.

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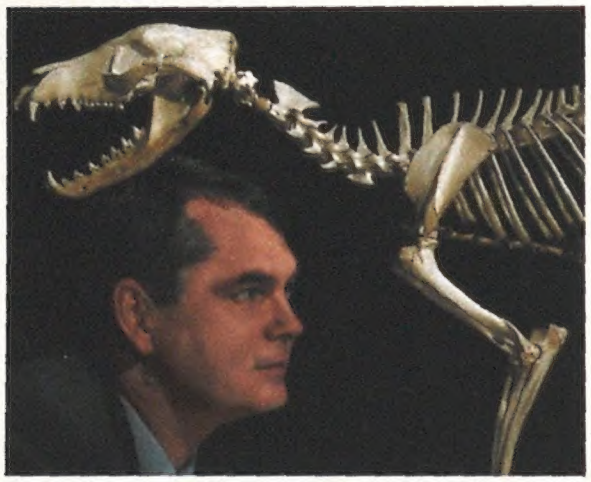
Smithsonian
JUNE 2003 VOLUME 34, NUMBER 3

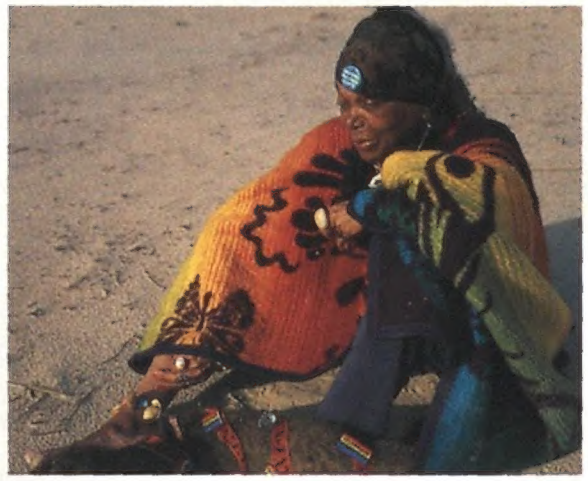
DEPARTMENTS

"'SHE HAS SINGLE-HANDEDLY gotten under the skin of every president since JFK,' says former press secretary Mike McCurry. As Gerald Ford once observed, 'Helen Thomas practices a finely balanced blend of journalism and acupuncture.'"
—"GRAND INQUISITOR," PAGE 27

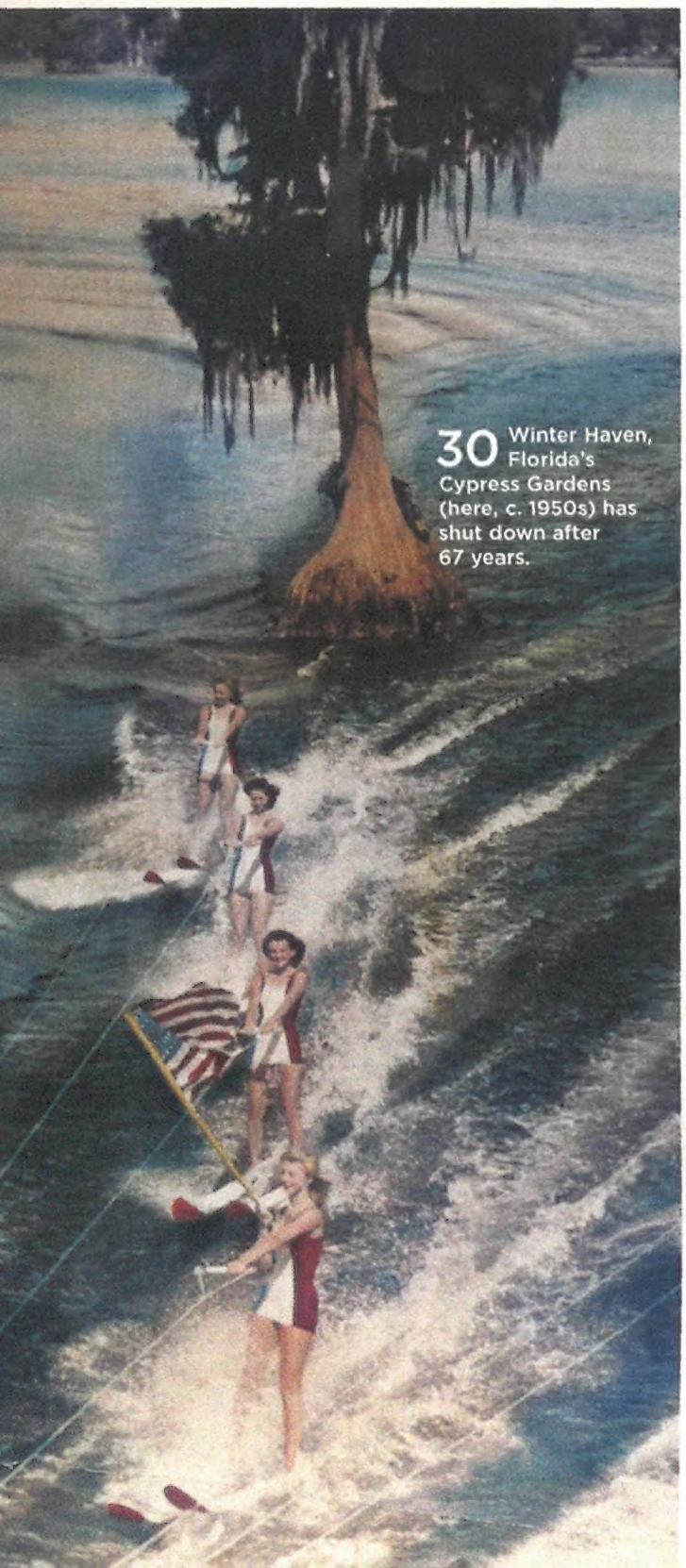


22 Researchers in Australia hope to one day clone the extinct Tasmanian tiger.

21 Thomas Struth is best known for his provocative museum photographs.



102 Kids think MaVynee Betsch is a shaman, which delights the former opera singer.



30 Winter Haven, Florida's Cypress Gardens (here, c. 1950s) has shut down after 67 years.

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A new show highlights the German photographer's superb art of observation

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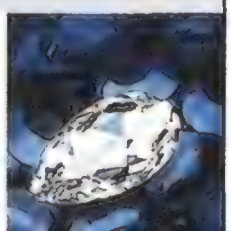

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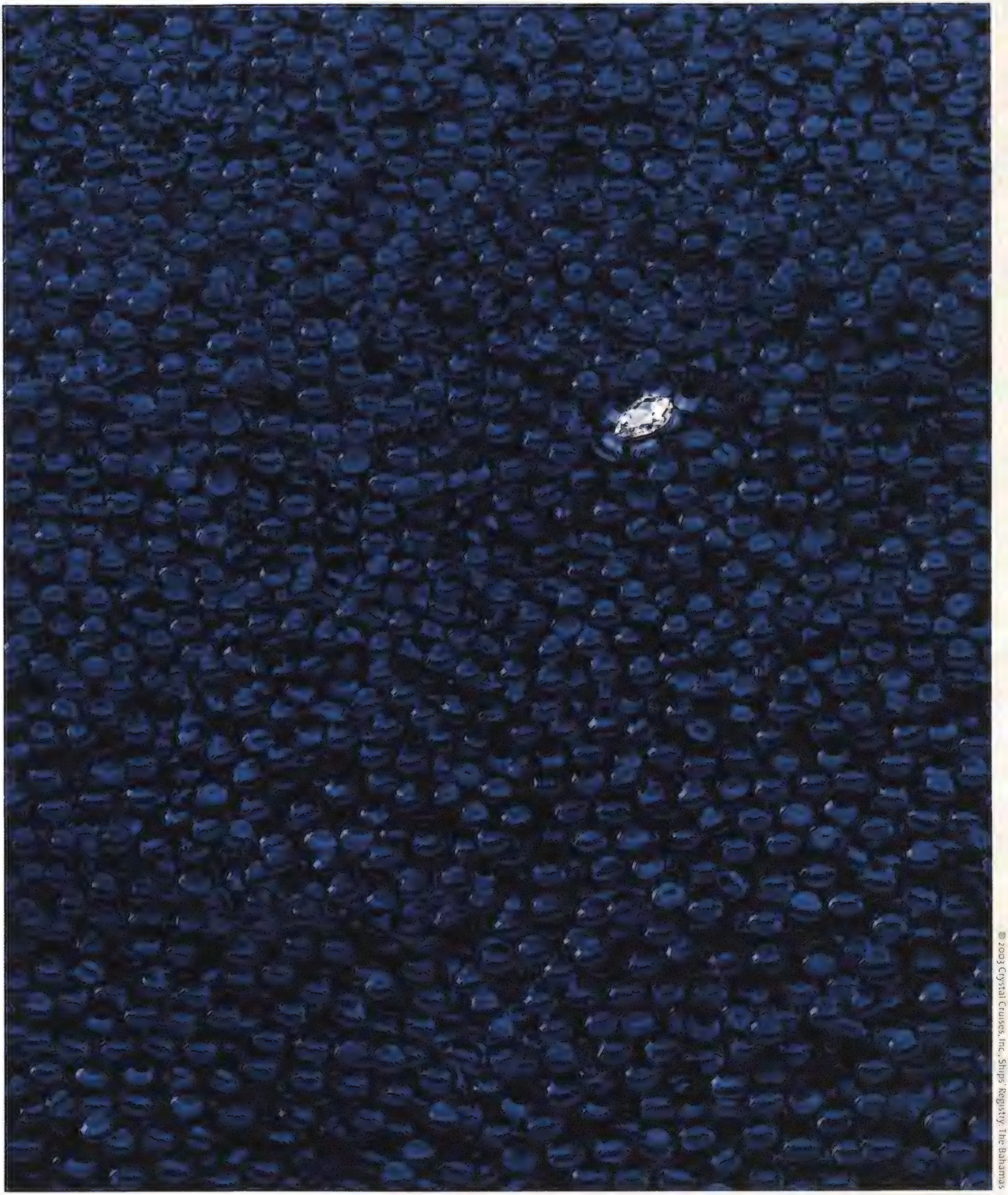

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Curiosities and Wonders

Where do you put all those treasures?

BEHIND-THE-SCENES facilities at the Smithsonian can be more distant than you might imagine. The National Museum of Natural History (NMNH), for example, has its principal storage facility, the Museum Support Center (MSC), in Maryland, a 20-minute drive from downtown Washington, D.C. The MSC is a technically sophisticated complex that keeps some of the nation's most valuable museum collections from risk and the encroachments of time.

When NMNH opened in 1910, it was the National Museum plain and simple, a grand repository for Smithsonian holdings that had outgrown their earlier homes in the Castle and what is now the Arts and Industries Building. The immense museum would take decades to fill, but even its great extent was no match finally for the Institution's acquisitive reach. By the 1960s, the collections occupied the building's galleries, storage areas and attic, which made the essential task of stewardship that much more difficult for the museum's staff.

After a decade and a half of planning and two years of construction, the Museum Support Center was dedicated in 1983. The plan of the complex is best appreciated from the air: four windowless storage pods, each three stories high and the size of a football field, with insulated walls 18 inches thick, fit neatly one to another, top to bottom, in a zigzag pattern across the landscape. A 20-foot-wide corridor, the core avenue of movement through the facility, separates the pods from a smaller, counterpart stretch of offices and laboratories. In the laboratories, various units, most but not all from within NMNH, conduct research that draws upon the collections. Here, for example, a long-term initiative between Smithsonian entomologists and the Walter Reed Army Institute of Research uses the Institution's extensive mosquito collection to do disease-transmittal research that advances public health around the world.

Keeping our valuable collections (above, Chinese ivory) from risk.

The challenge in building the MSC was to create an environment that could cope with the astonishing diversity of NMNH collections: botanical and zoological specimens; minerals and meteorites; fossils; archaeological findings; the cultural heritage of many peoples and nations. The flexibly configured MSC pods accommodate everything from microscopic algae to, variously, the skulls of whales and elephants (looking like pieces of abstract sculpture), Chinese ivory chess sets, a huge wooden Buddha, a 65-foot-long war canoe from the American Northwest—the list goes on and on. Moreover, the items must be kept available to researchers who visit the MSC daily to explore the collections.

Each separate object (or class of objects) requires conditions that best favor its survival. Wood must not dry and crack, fabrics not fray or fade; skins must stay supple, and fish remain intact in their jars of preservation fluid. The anthropological holdings, which overflowed the spaces of the downtown museum, have particularly benefited from the move to the custom quarters. Open a cabinet full of Native American moccasins, for example, and you'll find the footwear labeled, shaped with tissue paper and arrayed in careful rows.

The highest tribute the Smithsonian can pay the items in its care is to secure them for the future, and that's done daily on the vast ordered premises of the MSC. In an earlier century, there existed, as precursors of the modern museum, what were called cabinets of wonders and curiosities. The MSC is beyond anything the collectors of that earlier time could have foreseen, but they would have recognized a similar impulse behind their enterprises and our own. Along every tier, behind every door and protective curtain, the MSC still keeps wonders.

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TABLETS

Brief Summary (For full Prescribing Information, see package insert.)

INDICATIONS AND USAGE: Allergic Rhinitis: CLARINEX Tablets 5 mg are indicated for the relief of the nasal and non-nasal symptoms of allergic rhinitis (seasonal and perennial) in patients 12 years of age and older.

Chronic Idiopathic Urticaria: CLARINEX Tablets are indicated for the symptomatic relief of pruritus, reduction in the number of hives, and size of hives, in patients with chronic idiopathic urticaria 12 years of age and older.

CONTRAINDICATIONS: CLARINEX Tablets 5 mg are contraindicated in patients who are hypersensitive to this medication or to any of its ingredients, or to loratadine.

PRECAUTIONS: Carcinogenesis, Mutagenesis, Impairment of Fertility: The carcinogenic potential of desloratadine was assessed using loratadine studies. In an 18-month study in mice and a 2-year study in rats, loratadine was administered in the diet at doses up to 40 mg/kg/day in mice (estimated desloratadine and desloratadine metabolite exposures were approximately 3 times the AUC in humans at the recommended daily oral dose) and 25 mg/kg/day in rats (estimated desloratadine and desloratadine metabolite exposures were approximately 30 times the AUC in humans at the recommended daily oral dose). Male mice given 40 mg/kg/day loratadine had a significantly higher incidence of hepatocellular tumors (combined adenomas and carcinomas) than concurrent controls. In rats, a significantly higher incidence of hepatocellular tumors (combined adenomas and carcinomas) was observed in males given 10 mg/kg/day and in males and females given 25 mg/kg/day. The estimated desloratadine and desloratadine metabolite exposures of rats given 10 mg/kg of loratadine were approximately 7 times the AUC in humans at the recommended daily oral dose. The clinical significance of these findings during long-term use of desloratadine is not known.

In genotoxicity studies with desloratadine, there was no evidence of genotoxic potential in a reverse mutation assay (*Salmonella/E. coli* mammalian microsome bacterial mutagenicity assay) or in two assays for chromosomal aberrations (human peripheral blood lymphocyte clastogenicity assay and mouse bone marrow micronucleus assay).

There was no effect on female fertility in rats at desloratadine doses up to 24 mg/kg/day (estimated desloratadine and desloratadine metabolite exposures were approximately 130 times the AUC in humans at the recommended daily oral dose). A male specific decrease in fertility, demonstrated by reduced female conception rates, decreased sperm numbers and motility, and histopathologic testicular changes, occurred at an oral desloratadine dose of 12 mg/kg in rats (estimated desloratadine exposures were approximately 45 times the AUC in humans at the recommended daily oral dose). Desloratadine had no effect on fertility in rats at an oral dose of 3 mg/kg/day (estimated desloratadine and desloratadine metabolite exposures were approximately 8 times the AUC in humans at the recommended daily oral dose).

Pregnancy Category C: Desloratadine was not teratogenic in rats at doses up to 48 mg/kg/day (estimated desloratadine and desloratadine metabolite exposures were approximately 210 times the AUC in humans at the recommended daily oral dose) or in rabbits at doses up to 60 mg/kg/day (estimated desloratadine exposures were approximately 230 times the AUC in humans at the recommended daily oral dose). In a separate study, an increase in preimplantation loss and a decreased number of implantations and fetuses were noted in female rats at 24 mg/kg (estimated desloratadine and desloratadine metabolite exposures were approximately 120 times the AUC in humans at the recommended daily oral dose). Reduced body weight and slow righting reflex were reported in pups at doses of 9 mg/kg/day or greater (estimated desloratadine and desloratadine metabolite exposures were approximately 50 times or greater than the AUC in humans at the recommended daily oral dose). Desloratadine had no effect on pup development at an oral dose of 3 mg/kg/day (estimated desloratadine and desloratadine metabolite exposures were approximately 7 times the AUC in humans at the recommended daily oral dose). There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, desloratadine should be used during pregnancy only if clearly needed.

Nursing Mothers: Desloratadine passes into breast milk, therefore a decision should be made whether to discontinue nursing or to discontinue desloratadine, taking into account the importance of the drug to the mother.

Pediatric Use: The safety and effectiveness of CLARINEX Tablets in pediatric patients under 12 years of age have not been established.

Geriatric Use: Clinical studies of desloratadine did not include sufficient numbers of subjects aged 65 and over to determine whether they respond differently from younger subjects. Other reported clinical experience has not identified differences between the elderly and younger patients. In general, dose selection for an elderly patient should be cautious, reflecting the greater frequency of decreased hepatic, renal, or cardiac function, and of concomitant disease or other drug therapy. (see **CLINICAL PHARMACOLOGY – Special Populations**).

Information for Patients: Patients should be instructed to use CLARINEX Tablets as directed. As there are no food effects on bioavailability, patients can be instructed that CLARINEX Tablets may be taken without regard to meals. Patients should be advised not to increase the dose or dosing frequency as studies have not demonstrated increased effectiveness at higher doses and somnolence may occur.

ADVERSE REACTIONS: Allergic Rhinitis: In multiple-dose placebo-controlled trials, 2,834 patients received CLARINEX Tablets at doses of 2.5 mg to 20 mg daily, of whom 1,655 patients received the recommended daily dose of 5 mg. In patients receiving 5 mg daily, the rate of adverse events was similar between CLARINEX and placebo-treated patients. The percent of patients who withdrew prematurely due to adverse events was 2.4% in the CLARINEX group and 2.6% in the placebo group. There were no serious adverse events in these trials in patients receiving desloratadine. All adverse events that were reported by greater than or equal to 2% of patients who received the recommended daily dose of CLARINEX Tablets (5.0 mg once-daily), and that were more common with CLARINEX Tablet than placebo, are listed in Table 5.

Table 5

Incidence of Adverse Events Reported by ≥ 2% of Allergic Rhinitis Patients in Placebo-Controlled, Multiple-Dose Clinical Trials

Adverse Experience	CLARINEX Tablets 5 mg (n=1,655)	Placebo (n=1,652)
Pharyngitis	4.1%	2.0%
Dry Mouth	3.0%	1.9%
Myalgia	2.1%	1.8%
Fatigue	2.1%	1.2%
Somnolence	2.1%	1.8%
Dysmenorrhea	2.1%	1.6%

The frequency and magnitude of laboratory and electrocardiographic abnormalities were similar in CLARINEX and placebo-treated patients.

There were no differences in adverse events for subgroups of patients as defined by gender, age, or race.

Chronic Idiopathic Urticaria: In multiple-dose, placebo-controlled trials of chronic idiopathic urticaria, 211 patients received CLARINEX Tablets and 205 received placebo. Adverse events that were reported by greater than or equal to 2% of patients who received CLARINEX Tablets and that were more common with CLARINEX than placebo were (rates for CLARINEX and placebo, respectively): headache (14%, 13%), nausea (5%, 2%), fatigue (5%, 1%), dizziness (4%, 3%), pharyngitis (3%, 2%), dyspepsia (3%, 1%), and myalgia (3%, 1%).

The following spontaneous adverse events have been reported during the marketing of desloratadine: tachycardia, and rarely hypersensitivity reactions (such as rash, pruritus, urticaria, edema, dyspnea, and anaphylaxis), and elevated liver enzymes including bilirubin.

DRUG ABUSE AND DEPENDENCE: There is no information to indicate that abuse or dependency occurs with CLARINEX Tablets.

OVERDOSAGE: Information regarding acute overdosage is limited to experience from clinical trials conducted during the development of the CLARINEX product. In a dose ranging trial, at doses of 10 mg and 20 mg/day somnolence was reported.

Single daily doses of 45 mg were given to normal male and female volunteers for 10 days. All ECGs obtained in this study were manually read in a blinded fashion by a cardiologist. In CLARINEX-treated subjects, there was an increase in mean heart rate of 9.2 bpm relative to placebo. The QT interval was corrected for heart rate (QT_c) by both the Bazett and Fridericia methods. Using the QT_c (Bazett) there was a mean increase of 8.1 msec in CLARINEX-treated subjects relative to placebo. Using QT_c (Fridericia) there was a mean increase of 0.4 msec in CLARINEX-treated subjects relative to placebo. No clinically relevant adverse events were reported.

In the event of overdose, consider standard measures to remove any unabsorbed drug. Symptomatic and supportive treatment is recommended. Desloratadine and 3-hydroxydesloratadine are not eliminated by hemodialysis.

Lethality occurred in rats at oral doses of 250 mg/kg or greater (estimated desloratadine and desloratadine metabolite exposures were approximately 120 times the AUC in humans at the recommended daily oral dose). The oral median lethal dose in mice was 353 mg/kg (estimated desloratadine exposures were approximately 290 times the human daily oral dose on a mg/m^2 basis). No deaths occurred at oral doses up to 250 mg/kg in monkeys (estimated desloratadine exposures were approximately 810 times the human daily oral dose on a mg/m^2 basis).

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Shoot, Don't Call

Announcing our first-ever photo contest

BY CAREY WINFREY

HERE'S WHAT WE KNOW NOW about our first-ever photo contest. It will be open to everyone except Smithsonian Institution employees and their families. There will be six winners—one best in show and a winner in each of five categories: Americana, Nature and Wildlife, Science, the Arts and Travel. We will publish the winning entries and possibly a runner-up or two in the magazine. (Winners will also receive other still-to-be-determined prizes.) We will ask that all photographs—digital or film—be submitted as 5 x 7 or 8 x 10 prints; none will be returned. (If you're one of the five finalists in each category, we'll ask for high-quality prints for final judging; these *will* be returned.) We plan to publish details of the contest and how to enter it in our September issue. (Until then, no calls or queries, please.) Now get out there and start shooting.

Lawler: Cologne trumped national security.

WHEN ANDREW LAWLER visited Iraq in the spring of 2002, the author of our piece on relics of Iraq's ancient civilizations, or what's left of them ("Saving Iraq's Treasures," p. 42), was there to report on the effect of looting and a decade of crippling sanctions on archaeological sites. (He also found time to haunt Baghdad cafés, where he smoked a nargileh, or water pipe, played a lot of dominoes and drank countless glasses of sweet hot tea.) Security was a concern. One day he and a group of archaeologists piled into a car in Baghdad and headed for nearby Ctesiphon, home of the largest brick arch in the world. "But we had to pass by what was, everyone believed, a 'secret' nuclear facility. At a roadblock, we were stopped. Our driver, an Iraqi medical student, bribed our way through with a bottle of cologne. Though the car was full of foreigners, the guards didn't bat an eye. Cologne trumped national security."

Platoni: Humiliating posture.

KARA PLATONI took a ride of another sort on our behalf. Reporting on the difficulty of breeding elephants in captivity ("Great Expectations," p. 58), Platoni was interviewing staff members at Six Flags Marine World in Vallejo, California, when she was persuaded that thorough research required her to ride the next available pachyderm: "I soon found that you haven't really experienced journalistic humiliation until you've sat, splay-legged, atop a lumbering elephant, attempting to interview your source by outshouting the screaming people on the roller coaster that is whipping by overhead, while trying not to drop your tape recorder on your interviewee's head." ○

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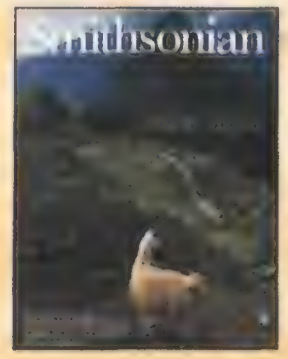

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LETTERS

Readers respond to the April issue:

DISCOUNTED PURCHASE

YOU REFER to the Louisiana Purchase of 1803 ("Westward Ho!") as a "breathtaking bargain" at four cents an acre. It was dwarfed 66 years later, however, when the 2-year-old Dominion of Canada purchased Rupert's Land, a region of almost 1,544,408 square miles, from the Hudson's Bay Company for £300,000. That was equivalent to $1,459,950, or less than two-tenths of a cent per acre.

SEAN LAWRENCE
HALIFAX, NOVA SCOTIA

I AM SURPRISED to see such a Eurocentric view of the Louisiana Purchase. What the United States truly bought was largely the French claim on Native American lands. In effect, the French government agreed not to interfere with the United States' takeover of these lands. We did not settle a wilderness beyond the Mississippi; these lands had been farmed, hunted, fished, lived upon and cared for, for thousands of years by a variety of nations.

P. A. NELSON
WOODBURY, CONNECTICUT

SAY WHAT?

LIKE TED GUP ("Playing by Ear"), I thoroughly enjoy my occasional hearing lapses. My favorite occurred while viewing a TV ad for Viagra. A troubled-looking man appeared on the screen. "Do you suffer from reptile dysfunction?" the announcer asked. I spent several seconds searching the man's face for scales before realizing his problem was in another area.

ROSEMARY SILVERMAN
CORINTH, NEW YORK

I'M HOPING my family and friends don't read the article. If they do, my se-

cret is out. Since being diagnosed with mild hearing loss, I've found speeches to be more interesting, cocktail party chatter almost entertaining and Sunday sermons often amusing. People wonder why I'm smiling. Ted Gup knows.

VIRGINIA R. DUQUETTE
CENTERVILLE, MASSACHUSETTS

MANY MOONS

"NEW UNDER THE SUN" tells of the discovery of three new moons orbiting Neptune. They are 18 to 24 miles wide, which has me wondering: How small can an orbiting object be and still be considered a moon, not just a rock?

BRUCE SIEGEL
MESA, ARIZONA

There's no lower limit on the size of a moon, a natural body that orbits a planet, says Matthew Holman of the Harvard-Smithsonian Astrophysical Observatory. Neptune probably has hundreds of moons a mile across or smaller. The only size limit is that a moon can't be so massive that its gravitational pull rivals that of the planet itself. —Ed.

BEAR FACTS

"BEAR TROUBLE," about evidence of industrial pollutants in polar bears in Svalbard, Norway, is disheartening. A total population of about 22,000 bears is not much, considering the possibility that pollutants such as PCBs in the food chain have affected their immune systems and cub mortality, and created abnormalities in some bears.

JOHN SPLETTSTOESSER
WACONIA, MINNESOTA

GOOSE BUMPS

SELDOM DOES A STORY give me goose bumps, but as I read about Chad Pregracke taking the trash problems of the Mississippi River into his own hands ("Trash Talker"), I couldn't help but think there really is hope for mankind.

CHRISTINE CANELOS
PALATINE, ILLINOIS

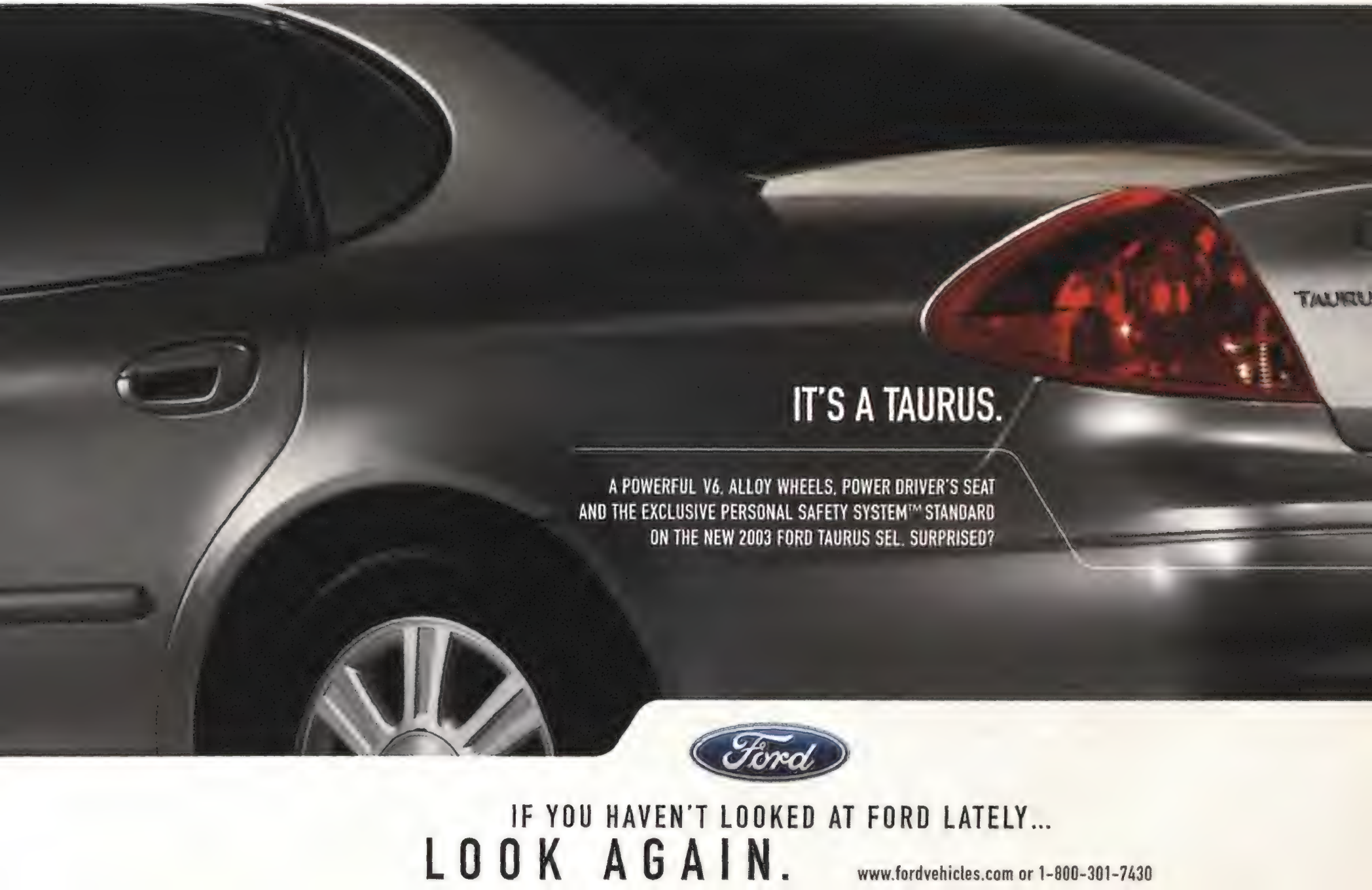
HOMESTEADERS

THE HOMESTEAD GRAYS, described in "Power Balls" as the "legendary Washington, D.C. Negro League team," was legendary [it won nine Negro League championships], but the baseball team actually originated in Homestead, a mill town near Pittsburgh, in 1910.

VINCE BROOKS
RICHMOND, VIRGINIA

OK, but many Washington-area fans think of the Grays as a local team: from the late 1930s through 1948, they played every Sunday during baseball season in the capital city's Griffith Stadium.—Ed.

Send letters to LettersEd@simag.si.edu or to **Letters, Smithsonian, MRC 951, P.O. Box 37012, Washington, D.C. 20013.** Please include a telephone number and address. Letters may be edited. Because of the high volume of mail we receive, we cannot guarantee a response to all letters. Send queries about the Smithsonian Institution to info@si.edu or to VIARC, Public Inquiry Mail Service, P.O. Box 37012, Washington, D.C. 20013.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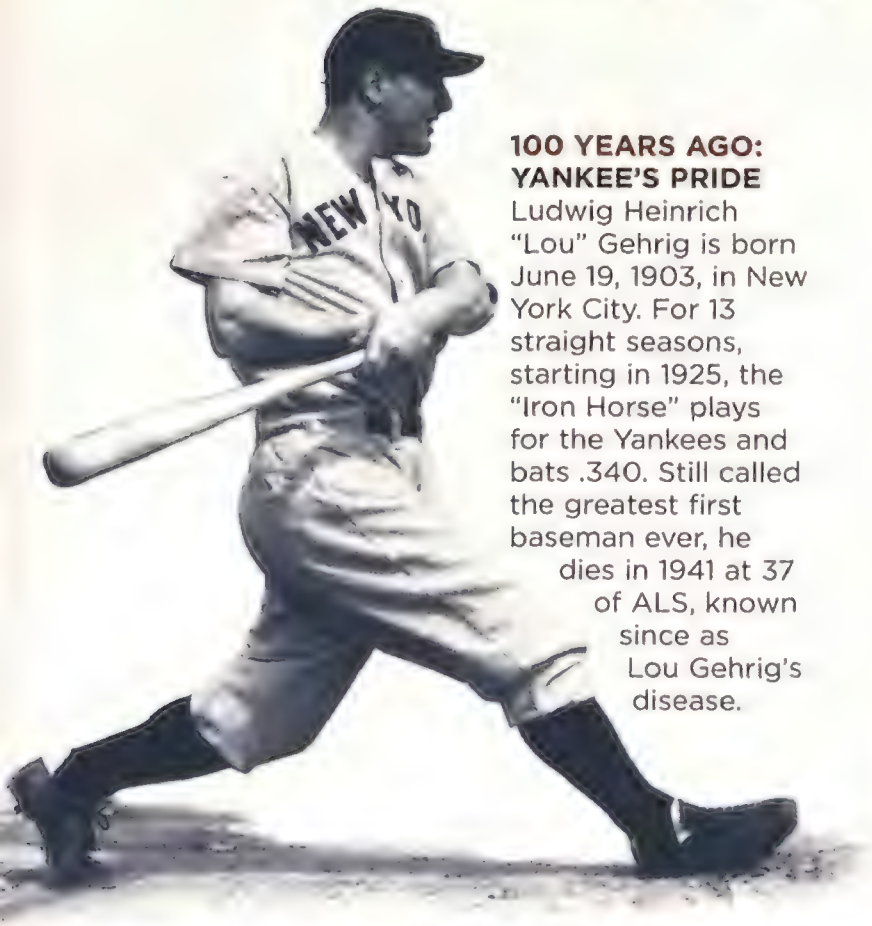
THIS MONTH IN HISTORY

JUNE ANNIVERSARIES—MOMENTOUS OR MERELY MEMORABLE



100 YEARS AGO: YANKEE'S PRIDE Ludwig Heinrich "Lou" Gehrig is born June 19, 1903, in New York City. For 13 straight seasons, starting in 1925, the "Iron Horse" plays for the Yankees and bats .340. Still called the greatest first baseman ever, he dies in 1941 at 37 of ALS, known since as Lou Gehrig's disease.

50 YEARS AGO: ULTIMATE PENALTY Julius and Ethel Rosenberg, convicted of giving U.S. atom bomb secrets to the Soviet Union, are electrocuted in New York—the only U.S. civilians to be executed for espionage. Their guilt, and the severity of their sentence, are debated to this day.

250 YEARS AGO: CHARM NOT YET LOST The British Museum (Montagu House, above) is established in London to hold antiquities, animal and plant specimens, art and books. It is the first national, secular and public facility of its kind. Work on the present museum, a vast neoclassical structure, begins in 1823. Five million people yearly visit the Elgin marbles, Rosetta stone and other artifacts.

20 YEARS AGO: GOING, GOING . . . NASA's *Pioneer 10* crosses Neptune's orbit, becoming the first man-made object to leave the solar system. Launched in 1972 to survey Jupiter, *Pioneer* just keeps on flying: in January 2003, NASA scientists detect it 7.5 billion miles from Earth.

30 YEARS AGO: "TREMENDOUS MACHINE" Secretariat wins the Belmont Stakes by 31 lengths in world record time to capture the first Triple Crown in 25 years. TV makes the "horse of the century" a star. Secretariat dies in 1989 after siring 653 foals.

70 YEARS AGO: FUN IN THE DARK America's first drive-in movie theater opens June 6, 1933, in Camden, New Jersey. "The whole family is welcome, regardless of how noisy the children are," says its inventor, Richard Hollingshead, an auto parts dealer. By 1958 there are 4,000 of the outdoor theaters, a.k.a. "ozoners," across the country. The drive-in's subsequent decline has been blamed on VCRs, daylight saving time—and bucket seats. ○

—ALISON MCLEAN

CLOCKWISE FROM TOP LEFT: A.P. / WIDE WORLD PHOTO; HULTON ARCHIVE / GETTY IMAGES (3); PETER COOKE; DON SANDERS / CAMDEN HISTORICAL SOCIETY; NASA / CORBIS

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Struth's museum photographs are "masterpieces of observation," says the Metropolitan Museum's director Philippe de Montebello.

ART INSTITUTE OF CHICAGO, RESTRICTED GIFT OF LEWIS MANILOW

Nothing but the Struth

A new exhibition showcases the German photographer's eye for art

THOMAS STRUTH is one of the world's most provocative art photographers, but his huge images of people in museums and galleries—the one above is 6 by 7 feet—are not some ironic art theory exercise. "I wanted to remind my audience that when artworks were made, they were not yet icons or museum pieces," says Struth, who is 48 and lives in his native Germany.

A three-month exhibition of about 90 Struth photographs, organized by the Dallas Museum of Art, opens June 28 at the Museum of Contemporary Art in Chicago. The works, created over 25 years, include eerily unpeopled street scenes and landscapes, family portraits and even pictures of flowers. But Struth, who started out as a painter and studied under the conceptual artist Gerhard Richter, is best known for his two dozen or so outsize museum photographs in which real people and painted figures seem to interact. In his 1990 photograph of Gustave Caillebotte's *Paris Street; Rainy Day*, above, taken at the Art Institute of Chicago, the strolling Parisians have more vitality than the women regarding them. Struth invests the 19th-century painting with new life, poses a question or two about how times (and art) have changed, and gives our self-awareness a nudge in the ribs: we catch ourselves people-watching. —*TERENCE MONMANEY*

True or False? Extinction is Forever

Researchers' efforts to clone the vanished Tasmanian tiger highlight the quandary of reviving long-gone creatures ~ BY LUBA VANGELOVA

Will cloning a Tasmanian tiger (the last known specimen, above, died in 1936) lead to indifference about today's endangered species?

"DANGER," says the sign on the door of a laboratory at the Australian Museum in Sydney: "Tasmanian Tiger, Trespassers will be eaten!" The joke is that the Tasmanian tiger—a beloved symbol of the island state that appears on its license plate—has been extinct for nearly seven decades. But researchers behind that door are working to bring the animal back to life by cloning it, using DNA extracted from specimens preserved decades ago. Among other things, the work raises questions about the nature of extinction itself.

The Tasmanian tiger's Latin designation, *Thylacinus cynocephalus*, or "dog-headed pouched-dog," makes it redundantly clear that the marsupial's feline nickname is a misnomer. It comes from the dark striping on its back that runs nearly shoulder to tail. The animal had large, powerful jaws, which secured the predator a place atop the local food chain. Females carried their young in backward-facing pouches.

Thylacines, once spread throughout mainland Australia and as far north as New Guinea, were probably outcompeted for food by the dingoes that humans introduced to the area some 4,000 years ago, says Australian Museum director Mike Archer, founder of the cloning project. Eventually, thylacines remained only on the dingo-free island of Tasmania, south of the mainland. But with the arrival of European settlers in the 1800s, the marsupial's days were numbered. Blamed (often wrongly) for killing livestock, the animals were hunted indiscriminately. The government made thylacines a protected species in 1936, but it was too late; the last specimen reportedly died in captivity the same year.

The Australian researchers set out to bring the animal back partly to atone for humanity's role in its extinction, Archer says. The idea took root 15 years ago when he saw a pickled thylacine pup in the museum's collection. "It jarred me and started me thinking," recalls the 58-year-old paleontologist and zoologist, who received his undergraduate degree from Princeton University and his doctorate from the University of Western Australia. "DNA is the recipe for making a creature. So if there is DNA preserved in the specimen, why shouldn't we begin to use technology to read that information, and then in some way use that information to reconstruct the animal? I raised the issue with a geneticist. The response was derisive laughter."

Then, in 1996, Dolly the sheep burst onto the scene and, suddenly, Archer

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says, "cloning wasn't just a madman's dream." Dolly proved that DNA from an ordinary animal cell—in her case, a ewe's udder—could generate a virtually identical copy, or clone, of the animal after the DNA was inserted into a treated egg, which was implanted in a womb and carried to term. Archer's goal is even more ambitious: cloning an animal with DNA from long-dead cells, reminiscent of the sci-fi novel and movie *Jurassic Park*. The challenge? The DNA that makes up the chromosomes in which genes are bundled falls apart after a cell dies.

Researchers working with Don Colgan, head of the museum's evolutionary biology department, extracted DNA from a thylacine pup preserved in alcohol in 1866, and biologist Karen Firestone obtained additional thylacine DNA from a tooth and a bone. Then, using a technique called polymerase chain reaction, the researchers found that the thylacine DNA fragments could be copied. The scientists next have to collect millions of DNA bits and pieces and create a "library" of the possibly tens of thousands of thylacine genes—a gargantuan task, they concede. Still, an even greater obstacle looms, that of stitching all those DNA fragments together properly into functioning chromosomes; the scientists don't know how many chromosomes a thylacine had, but suspect that, like related marsupials, it had 14. But no scientist has ever synthesized a mammalian chromosome from scratch. If the Aussie scientists accomplish those feats, they may try to generate a thylacine by placing the synthetic chromosomes into a treated egg cell of a related species—say, a Tasmanian devil, another carnivorous marsupial—and implant the egg in a surrogate mother.

Such cross-species cloning, as the procedure is called, is no longer fantasy. In 2001, Advanced Cell Technology (ACT) of Worcester, Massachusetts, succeeded in cloning, for the first time, an endangered animal, a rare wild ox called a gaur. This past April, scientists from ACT, Trans Ova Genetics of Sioux Center, Iowa, and the Zoological Society of San Diego announced they had cloned a banteng, an endangered wild bovine species native to Southeast Asia, using a domesticated cow as a surrogate mother. Meanwhile, researchers in Spain are trying to clone an extinct mountain goat, called a bucardo, using cells collected and frozen before the species' last member died in 2000. Other scientists hope to clone a woolly mammoth from 20,000-year-old specimens found in Siberian permafrost.

"This area of genetics is moving forward at an exponential rate," concedes one skeptic of the cloning project.

It "started me thinking," Archer says of the pickled thylacine pup, a DNA source.

Many scientists are skeptical of the thylacine project. Ian Lewis, technology development manager at Genetics Australia Cooperative Ltd., in Bacchus Marsh, Victoria, Australia, says the chances of cloning an animal from "snippets" of DNA are "fanciful." Robert Lanza, ACT's medical director and vice president, says cloning a thylacine is beyond existing science. But it may be within reach in several years, he adds: "This area of genetics is moving forward at an exponential rate."

In Australia, critics say the millions of dollars that the thylacine project will cost would be better spent trying to save endangered species and disappearing habitats. One opponent, Tasmanian senator and former Australia Wilderness Society Director Bob Brown, says people might become blasé about conservation if they're lulled into thinking a lost species can always be resurrected. The research "feeds the mind-set that science will fix everything," he says.

Another concern touches on the great nature-nurture quandary: Would a cloned thylacine truly represent the species, given that it would not have had the chance to learn key behaviors from other thylacines? For some carnivores, says University of Louisville behavioral ecologist Lee Dugatkin, "it's clear that young individuals learn various hunting strategies from parents." And a foster parent might not fill the gap. Dugatkin asks whether a cloned Tasmanian tiger raised by a surrogate Tasmanian devil would just be a devil in tiger's clothing.

But Archer says, in effect, a thylacine is a thylacine, however its DNA blueprint is obtained, because much animal behavior, including that of marsupials, is genetically hardwired or instinctual. "We take kittens and raise them with humans, but they still behave like cats," he points out. And Archer, who envisions nature preserves populated by cloned thylacines and their offspring, says the project is actually a boon to conservation: it shows what it takes just to contemplate resurrecting a vanished species.

For now, Archer and coworkers are trying to piece together the thylacine's exact genetic makeup. That won't, of itself, bring the animal back, but it may provide new insights into the workings of the lamented creature. In that sense, the real danger would be not trying. ○

LUBA VANGELOVA, a freelance writer, lives in Washington, D.C.

DAVID GRAY / REUTERS PICTURES

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For patients who have difficulty swallowing capsules, one tablespoon of applesauce can be added to an empty bowl and the NEXIUM Delayed-Release Capsule can be opened, and the pellets carefully emptied onto the applesauce. The pellets should be mixed with the applesauce and then swallowed immediately. The applesauce used should not be hot and should be soft enough to be swallowed without chewing. The pellets should not be chewed or crushed. The pellet/applesauce mixture should not be stored for future use. Antacids may be used while taking NEXIUM. **Drug Interactions** Esomeprazole is extensively metabolized in the liver by CYP2C19 and CYP3A4. *In vitro* and *in vivo* studies have shown that esomeprazole is not likely to inhibit CYPs 1A2, 2A6, 2C9, 2D6, 2E1 and 3A4. No clinically relevant interactions with drugs metabolized by these CYP enzymes would be expected. Drug interaction studies have shown that esomeprazole does not have any clinically significant interactions with phenytoin, warfarin, quinidine, clarithromycin or amoxicillin. Esomeprazole may potentially interfere with CYP2C19, the major esomeprazole metabolizing enzyme. Coadministration of esomeprazole 30 mg and diazepam, a CYP2C19 substrate, resulted in a 45% decrease in clearance of diazepam. Increased plasma levels of diazepam were observed 12 hours after dosing and onwards. However, at that time, the plasma levels of diazepam were below the therapeutic interval, and thus this interaction is unlikely to be of clinical relevance. Esomeprazole inhibits gastric acid secretion. Therefore, esomeprazole may interfere with the absorption of drugs where gastric pH is an important determinant of bioavailability (eg, ketoconazole, iron salts and digoxin). Coadministration of oral contraceptives, diazepam, phenytoin, or quinidine did not seem to change the pharmacokinetic profile of esomeprazole. **Carcinogenesis, Mutagenesis, Impairment of Fertility** The carcinogenic potential of esomeprazole was assessed using omeprazole studies. In two 24-month oral carcinogenicity studies in rats, omeprazole at daily doses of 1.7, 3.4, 13.8, 44.0 and 140.8 mg/kg/day (about 0.7 to 57 times the human dose of 20 mg/day expressed on a body surface area basis) produced gastric ECL cell carcinoids in a dose-related manner in both male and female rats; the incidence of this effect was markedly higher in female rats, which had higher blood levels of omeprazole. Gastric carcinoids seldom occur in the untreated rat. In addition, ECL cell hyperplasia was present in all treated groups of both sexes. In one of these studies, female rats were treated with 13.8 mg omeprazole/kg/day (about 5.6 times the human dose on a body surface area basis) for 1 year, then followed for an additional year without the drug. No carcinoids were seen in these rats. An increased incidence of treatment-related ECL cell hyperplasia was observed at the end of 1 year (94% treated vs 10% controls). By the second year the difference between treated and control rats was much smaller (46% vs 26%) but still showed more hyperplasia in the treated group. Gastric adenocarcinoma was seen in one rat (2%). No similar tumor was seen in male or female rats treated for 2 years. For this strain of rat no similar tumor has been noted historically, but a finding involving only one tumor is difficult to interpret. A 78-week mouse carcinogenicity study of omeprazole did not show increased tumor occurrence, but the study was not conclusive. Esomeprazole was negative in the Ames mutation test, in the *in vivo* rat bone marrow cell chromosome aberration test, and the *in vivo* mouse micronucleus test. Esomeprazole, however, was positive in the *in vitro* human lymphocyte chromosome aberration test. Omeprazole was positive in the *in vitro* human lymphocyte chromosome aberration test, the *in vivo* mouse bone marrow cell chromosome aberration test, and the *in vivo* mouse micronucleus test. The potential effects of esomeprazole on fertility and reproductive performance were assessed using omeprazole studies. Omeprazole at oral doses up to 138 mg/kg/day in rats (about 56 times the human dose on a body surface area basis) was found to have no effect on reproductive performance of parental animals. **Pregnancy** *Teratogenic Effects. Pregnancy Category B*—Teratology studies have been performed in rats at oral doses up to 280 mg/kg/day (about 57 times the human dose on a body surface area basis) and in rabbits at oral doses up to 86 mg/kg/day (about 35 times the human dose on a body surface area basis) and have revealed no evidence of impaired fertility or harm to the fetus due to esomeprazole. There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed. Teratology studies conducted with omeprazole in rats at oral doses up to 138 mg/kg/day (about 56 times the human dose on a body surface area basis) and in rabbits at doses up to 69 mg/kg/day (about 56 times the human dose on a body surface area basis) did not disclose any evidence for a teratogenic potential of omeprazole. In rabbits, omeprazole in a dose range of 6.9 to 69.1 mg/kg/day (about 5.5 to 56 times the human dose on a body surface area basis) produced dose-related increases in embryo-lethality, fetal resorptions, and pregnancy disruptions. In rats, dose-related embryo/fetal toxicity and postnatal developmental toxicity were observed in offspring resulting from parents treated with omeprazole at 13.8 to 138.0 mg/kg/day (about 5.6 to 56 times the human doses on a body surface area basis). There are no adequate and well-controlled studies in pregnant women. Sporadic reports have been received of congenital abnormalities occurring in infants born to women who have received omeprazole during pregnancy. **Nursing Mothers** The excretion of esomeprazole in milk has not been studied. However, omeprazole concentrations have been measured in breast milk of a woman following oral administration of 20 mg. Because esomeprazole is likely to be excreted in human milk, because of the potential for serious adverse reactions in nursing infants from esomeprazole, and because of the potential for tumorigenicity shown for omeprazole in rat carcinogenicity studies, a decision should be made whether to discontinue nursing or to discontinue the drug, taking into account the importance of the drug to the mother. **Pediatric Use** Safety and effectiveness in pediatric patients have not been established. **Geriatric Use** Of the total number of patients who received NEXIUM in clinical trials, 778 were 65 to 74 years of age and 124 patients were ≥ 75 years of age. No overall differences in safety and efficacy were observed between the elderly and younger individuals, and other reported clinical experience has not identified differences in responses between the elderly and younger patients, but greater sensitivity of some older individuals cannot be ruled out. **ADVERSE REACTIONS** The safety of NEXIUM was evaluated in over 10,000 patients (aged 18-84 years) in clinical trials worldwide including over 7,400 patients in the United States and over 2,600 patients in Europe and Canada. Over 2,900 patients were treated in long-term studies for up to 6-12 months. In general, NEXIUM was well tolerated in both short- and long-term clinical trials. The safety in the treatment of healing of erosive esophagitis was assessed in four randomized comparative clinical trials, which included 1,240 patients on NEXIUM 20 mg, 2,434 patients on NEXIUM 40 mg, and 3,008 patients on omeprazole 20 mg daily. The most frequently occurring adverse events (≥1%) in all three groups was headache (5.5, 5.0, and 3.8, respectively) and diarrhea (no difference among the three groups). Nausea, flatulence, abdominal pain, constipation, and dry mouth occurred at similar rates among patients taking NEXIUM or omeprazole. Additional adverse events that were reported as possibly or probably related to NEXIUM with an incidence < 1% are listed below by body system: ***Body as a Whole:*** abdomen enlarged, allergic reaction, asthenia, back pain, chest pain, chest pain substernal, facial edema, peripheral edema, hot flushes, fatigue, fever, flu-like disorder, generalized edema, leg edema, malaise, pain, rigors; ***Cardiovascular:*** flushing, hypertension, tachycardia; ***Endocrine:*** goiter; ***Gastrointestinal:*** bowel irregularity, constipation aggravated, dyspepsia, dysphagia, dysplasia GI, epigastric pain, eructation, esophageal disorder, frequent stools, gastroenteritis, GI hemorrhage, GI symptoms not otherwise specified, hiccup, melena, mouth disorder, pharynx disorder, rectal disorder, serum gastrin increased, tongue disorder, tongue edema, ulcerative stomatitis, vomiting; ***Hearing:*** earache, tinnitus; ***Hematologic:*** anemia, anemia hypochromic, cervical lymphoadenopathy, epistaxis, leukocytosis, leukopenia, thrombocytopenia; ***Hepatic:*** bilirubinemia, hepatic function abnormal, SGOT increased, SGPT increased; ***Metabolic/Nutritional:*** glycosuria, hyperuricemia, hyponatremia, increased alkaline phosphatase, thirst, vitamin B12 deficiency, weight increase, weight decrease; ***Musculoskeletal:*** arthralgia, arthritis aggravated, arthropathy, cramps, fibromyalgia syndrome, hernia, polymyalgia rheumatica; ***Nervous System/Psychiatric:*** anorexia, apathy, appetite increased, confusion, depression aggravated, dizziness, hypertonia, nervousness, hypoesthesia, impotence, insomnia, migraine, migraine aggravated, paresthesia, sleep disorder, somnolence, tremor, vertigo, visual field defect; ***Reproductive:*** dysmenorrhea, menstrual disorder, vaginitis; ***Respiratory:*** asthma aggravated, coughing, dyspnea, larynx edema, pharyngitis, rhinitis, sinusitis; ***Skin and Appendages:*** acne, angioedema, dermatitis, pruritus, pruritus ani, rash, rash erythematous, rash maculo-papular, skin inflammation, sweating increased, urticaria; ***Special Senses:*** otitis media, parosmia, taste loss, taste perversion; ***Urogenital:*** abnormal urine, albuminuria, cystitis, dysuria, fungal infection, hematuria, micturition frequency, moniliasis, genital moniliasis, polyuria; ***Visual:*** conjunctivitis, vision abnormal. Endoscopic findings that were reported as adverse events include: duodenitis, esophagitis, esophageal stricture, esophageal ulceration, esophageal varices, gastric ulcer, gastritis, hernia, benign polyps or nodules, Barrett's esophagus, and mucosal discoloration. Postmarketing Reports – There have been spontaneous reports of adverse events with postmarketing use of esomeprazole. These reports have included rare cases of anaphylactic reaction. Other adverse events not observed with NEXIUM, but occurring with omeprazole can be found in the omeprazole package insert, **ADVERSE REACTIONS** section. **OVERDOSAGE** A single oral dose of esomeprazole at 510 mg/kg (about 103 times the human dose on a body surface area basis), was lethal to rats. The major signs of acute toxicity were reduced motor activity, changes in respiratory frequency, tremor, ataxia, and intermittent clonic convulsions. There have been no reports of overdose with esomeprazole. Reports have been received of overdosage with omeprazole in humans. Doses ranged up to 2,400 mg (120 times the usual recommended clinical dose). Manifestations were variable, but included confusion, drowsiness, blurred vision, tachycardia, nausea, diaphoresis, flushing, headache, dry mouth, and other adverse reactions similar to those seen in normal clinical experience (see omeprazole package insert-**ADVERSE REACTIONS**). No specific antidote for esomeprazole is known. Since esomeprazole is extensively protein bound, it is not expected to be removed by dialysis. In the event of overdosage, treatment should be symptomatic and supportive. As with the management of any overdose, the possibility of multiple drug ingestion should be considered. For current information on treatment of any drug overdose, a certified Regional Poison Control Center should be contacted. Telephone numbers are listed in the Physicians' Desk Reference (PDR) or local telephone book.

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[*Helen Thomas' Press Passes*]
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Grand Inquisitor

White House diva Helen Thomas has grilled every president since JFK ~ BY VICTORIA DAWSON

THE WASHINGTON, D.C. cabdriver couldn't quite place her but knew that the passenger, a diminutive woman with short dark hair, was somebody important. Finally, the cabbie turned around and asked straight out: "Aren't you the woman the presidents love to hate?"

Helen Thomas, who at age 82 is the indisputable dean of the White House press corps, tells that story on herself. For decades, she has posed the opening question at every presidential press conference, then closed the event by saying, "Thank you, Mr. President." As a correspondent and White House bureau chief for United Press International for most of her 60-year career, Thomas has been a journalistic thorn in the side of every president from John F. Kennedy to George W. Bush. "She has single-handedly gotten under the skin of every president since JFK," says Mike McCurry, press secretary during the Clinton years. As Gerald Ford once ob-

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served, Thomas practices a "finely balanced blend of journalism and acupuncture." Jacqueline Kennedy was less subtle: she referred to Thomas and her Associated Press counterpart as "the harpies."

But history has a way of arranging ironic rebuttals. For just as Jackie's off-white silk chiffon inaugural gown now resides in the Smithsonian's National Museum of American History, so too do three of Thomas' White House press passes, showcased in the "American Presidency" exhibit. "The press curbs presidential power," says curator Harry Rubenstein. "And Helen Thomas epitomizes the White House press corps."

Correspondent Thomas (with press secretary Ari Fleischer, far right, in 2002) says all presidents stonewall the press: "Once they get in the White House, the iron curtain comes down."

J. SCOTT APPLEWHITE / AP PHOTO

Says Bob Deans, one of Thomas' colleagues and the White House correspondent for Cox Newspapers: "She has great respect for the office of the presidency. But she is not intimidated by the person who temporarily inhabits the office." Thomas' conduct of this epic adversarial relationship is unstinting, although she no longer works out of the UPI cubicle in the White House. She resigned from that organization in 2000, after the wire service changed ownership. Today, Thomas, who still occupies her traditional front-row seat in the briefing room, covers the White House in a column for the Hearst newspapers. Formal seat assignments notwithstanding, most spots are up for grabs. "But no one sits in Helen's seat," says Martha Joynt Kumar, professor of political science at Towson University and an authority on the relationship between the press and the White House.

Thomas continues to attend daily briefings most mornings at the White House, and she also continues to decry

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Says former press secretary Marlin Fitzwater, recalling Thomas' daily stakeouts of his office: "You had to be prepared, because she was always there."

the inevitable barriers between president and press. When she addressed the National Press Club in 2000, someone asked her which of the then eight presidents she had covered had allowed the greatest access. "None," she replied. "They are all difficult. Once they get in the White House, the iron curtain comes down. Everything is classified. The color of the walls—they would even classify that."

But over the past 50 years, Thomas has scaled a lot of other barriers: she was the first woman to be named White House bureau chief of a major wire service, the first to become a president of the White House Correspondents Association and the first woman member of the Gridiron Club. And she was the first woman to receive the National Press Club's Fourth Estate Award. "I never aspired to be first," she once said. "Only to be there." But just being there was no mean feat for a female in the then male ranks of Washington journalism. "Helen has done more for the role of women in journalism," says Marlin Fitzwater, press secretary to presidents Ronald Reagan and George H.W. Bush. "She was just always at the door saying, 'I have a right to be here.'"

Thomas' approach to her job—first to arrive, last to leave, high speed and tenacity at every moment in between—has left many a younger colleague in the dust and many a press secretary chuckling. (In some cases, the laughter came long after the fact.) "Every morning, I arrived at the White House and found her sitting on my credenza, waiting," Fitzwater recalls of Thomas' legendary stakeouts. "You had to be prepared, because she was always there." So, too, for McCurry, whose workday invariably began with Thomas' chirpy query: "What do you have for me?" McCurry's standard rejoinder: "Helen! I just got to work. All I've got for you is a muffin and a cup of coffee!"

In the end, Thomas says, it all comes down to "enthusiasm, noisiness, energy and curiosity. You have to keep asking 'Why?'" ○

VICTORIA DAWSON is a freelance writer who is based in Washington, D.C.

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JUST LOOKING

GOOD-BYE GIRLS "It was heaven," says Willa McGuire Cook, 75, of her stint from 1948 to 1959 as "prima ski-ballerina" at Cypress Gardens in Winter Haven, Florida. The 67-year-old park—known for its water show and strolling Southern belles—closed in April due to a decline in visitors. Cook, not pictured on this 1950s postcard, ski-doubled for Esther Williams in 1953's *Easy to Love*, which was filmed at the gardens, and designed the tutus and choreography for this foamy "Swan Ballet." An eight-time national champion, Cook still skis three times a week.

"It was an 'oh my God' moment," says Clare Weeks Amoruso (below, with colleague Douglas Connolly), of finding the lost volume.

Capitol Discovery

Senate staffers come across a historic treasure in a dusty storage room – BY PHILIP KOPPER

AFTER SENATE STAFFERS Clare Weeks Amoruso and Douglas Connolly finished cleaning out a storeroom in the subbasement of the U.S. Capitol this past November, they noticed a door to a nearby room ajar. Curious, they walked inside and found floor-to-ceiling shelves crammed with dust-covered boxes of decades-old insurance brochures and payroll records. Then the spine of a book bound in cloth and leather caught Connolly's eye. Stacked carelessly with others on a low shelf, and bearing the dates 1790-1881 in gilt digits,

the book was blandly titled *Senators Compensation and Mileage*.

Opening the large, dusty volume, they found its rag-paper pages covered with notes in ornate script, and column after column of numbers within neat rules, and names in lists, and signatures writ large. "All of a sudden," said Connolly, "there was Thomas Jefferson." Here, too, was Aaron Burr and John Adams, whose signature matched that on the dust jacket of David McCullough's biography of Adams, which Amoruso was then reading.

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"It was an 'oh my God' kind of moment," she says. "We couldn't believe it was real," says Connolly. Even though it was past quitting time, Connolly called the historian of the Senate, Richard Baker, who came running.

One look at the book told Baker that he "was holding something significant" and that he'd better call home to say he'd be working late. Here was the long-lost official payroll and expense register for the Senate's first 90 years, the one-of-a-kind record of every dollar paid to senators in wages and travel reimbursements. A second look revealed mold on the fore edge, cause for getting the book to a conservation lab.

Not only was it the genuine article, said Baker during a press conference set up by then Majority Leader Tom Daschle, but "there is nothing that comes remotely close to it in the archives of the Senate." Near it were 59 successor volumes of ledgers, books not as dramatic as the ledger dubbed "S1" because they cover later, better-documented times.

The first ledger chronicles spending in the Senate from the time it had 26 members representing the 13 states until it had 76 from 38 states. To historians, its raw data promise a lode of information and insights to be coaxed and tweaked, teased and winkled from its pages. After only a cursory examination, for instance, Baker found notations accompanying entries for Senate stipends during a special session on March 4, 1801, which revealed that the world's greatest deliberative body advised and consented to the appointment of President John Adams' entire cabinet in a single day.

The ledger also shows that senators were paid $6 per day when the legislature was in session. Travel was reimbursed at 30 cents a mile for up to 20 miles a day, the federal government's first per diem perk. (Two centuries later, senators are reimbursed at only 6 cents more a mile for road trips.) In an early instance of paid sick leave, "Mr. [Richard] Potts [of Maryland] was detained last January on the road by sickness" and received $49 more for his pains.

"There is nothing that comes even close to it in the Senate archives," says Richard Baker.

"The book speaks volumes," says Senate Historian Baker, but it will speak slowly.

The ledger also reveals that Congress raised a senator's pay in 1816 from the $6 per diem to $1,500 a year—only to see some incumbents voted out by constituents angry over the raise. (Today a senator earns $154,700 a year and a per diem of $165 when traveling.)

But the ledger also indicates that senators did pitch in financially during the Civil War. The newfound records prove what historians had suspected but had not been able to prove: every senator paid the 5 percent "war tax" imposed on top-bracket salaries.

Even innocuous-seeming entries in the ledger may prove rich to historians. The book, for instance, includes a rather mundane dunning letter from the presidentially appointed comptroller of the Treasury, Joseph Anderson, to Walter Lowrie, secretary of the Senate, stating that the Senate had claimed too many expenses in 1832 and thus owed $5,845.20. But, in fact, Baker believes, this letter was a salvo in a bitter battle between President Andrew Jackson and the Senate over the national banking system. It appears to be political payback for the Senate's failure to do the president's bidding. Later, the Senate would vote to "censure" Jackson.

According to a newspaper clipping pasted in the book, the journal came to the attention of the eighth secretary of the Senate in 1884, who ordered it rebound in the belief it ought to last several centuries longer "with proper care." But less than a century passed before someone, probably from the Disbursing Office, put it in storage in SSB1 (Senate Sub Basement 1), part of a suite of rooms built beneath the Capitol's steps when the building's East Front was extended in 1962.

As luck would have it the room—dark, dry and cool—proved reasonably friendly to old paper. Then, on November 1, Clare Amoruso went to SSB3 in search of the voting records of former Senator Walter F. Mondale, who had been tapped by the Democrats to run for the vacancy created by Senator Paul Wellstone's death in an airplane crash a week earlier. (Mondale would lose that election to Norm Coleman.)

There she encountered an aide from the Capitol Architect's office who told her that the storerooms in the sub-basement would soon be demolished to make room for escalators to the new visitors' center, now under construction. Amoruso returned two weeks later with Connolly to save some records. It was then that they discovered the ledger.

Since then, the book has traveled to the Library of Congress, where it was scanned, and then went on to the National Archives' conservation laboratory. A digital facsimile of the ledger will soon appear on the Senate Web site, www.senate.gov.

Baker plans to display the book in the Senate visitors' center, scheduled for completion in 2005, which means it will then reside within yards of where it sat in the dusty dark for decades.

"The book speaks volumes," Baker says, but it will take time for historians to unlock all its myriad secrets. "It will speak very slowly, having been silent for so long." ○

PHILIP KOPPER runs Posterity Press, a publishing house in Bethesda, Maryland.

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Discuss your general health status with your doctor to ensure that you are healthy enough to engage in sexual activity. If you experience chest pain, nausea, or any other discomforts during sex or an erection that lasts longer than 4 hours, seek immediate medical help. The most common side effects of VIAGRA are headache, facial flushing, and upset stomach. Less commonly, bluish vision, blurred vision, or sensitivity to light may briefly occur.

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This medicine can help many men when it is used as prescribed by their doctors. However, VIAGRA is not for everyone. It is intended for use only by men who have a condition called erectile dysfunction. **VIAGRA must never be used by men who are taking medicines that contain nitrates of any kind, at any time. This includes nitroglycerin. If you take VIAGRA with any nitrate medicine your blood pressure could suddenly drop to an unsafe or life threatening level.**

What Is VIAGRA?

VIAGRA is a pill used to treat erectile dysfunction (impotence) in men. It can help many men who have erectile dysfunction get and keep an erection when they become sexually excited (stimulated).

You will not get an erection just by taking this medicine. VIAGRA helps a man with erectile dysfunction get an erection only when he is sexually excited.

How Sex Affects the Body

When a man is sexually excited, the penis rapidly fills with more blood than usual. The penis then expands and hardens. This is called an erection. After the man is done having sex, this extra blood flows out of the penis back into the body. The erection goes away. If an erection lasts for a long time (more than 6 hours), it can permanently damage your penis. You should call a doctor immediately if you ever have a prolonged erection that lasts more than 4 hours.

Some conditions and medicines interfere with this natural erection process. The penis cannot fill with enough blood. The man cannot have an erection. This is called erectile dysfunction if it becomes a frequent problem.

During sex, your heart works harder. Therefore sexual activity may not be advisable for people who have heart problems. Before you start any treatment for erectile dysfunction, ask your doctor if your heart is healthy enough to handle the extra strain of having sex. If you have chest pains, dizziness or nausea during sex, stop having sex and immediately tell your doctor you have had this problem.

How VIAGRA Works

VIAGRA enables many men with erectile dysfunction to respond to sexual stimulation. When a man is sexually excited, VIAGRA helps the penis fill with enough blood to cause an erection. After sex is over, the erection goes away.

VIAGRA Is Not for Everyone

As noted above (*How Sex Affects the Body*), ask your doctor if your heart is healthy enough for sexual activity.

If you take any medicines that contain nitrates–either regularly or as needed–you should never take VIAGRA. If you take VIAGRA with any nitrate medicine or recreational drug containing nitrates, your blood pressure could suddenly drop to an unsafe level. You could get dizzy, faint, or even have a heart attack or stroke. Nitrates are found in many prescription medicines that are used to treat angina (chest pain due to heart disease) such as:

- nitroglycerin (sprays, ointments, skin patches or pastes, and tablets that are swallowed or dissolved in the mouth)
- isosorbide mononitrate and isosorbide dinitrate (tablets that are swallowed, chewed, or dissolved in the mouth)

Nitrates are also found in recreational drugs such as amyl nitrate or nitrite ("poppers"). If you are not sure if any of your medicines contain nitrates, or if you do not understand what nitrates are, ask your doctor or pharmacist

VIAGRA is only for patients with erectile dysfunction. VIAGRA is not for newborns, children, or women. Do not let anyone else take your VIAGRA VIAGRA must be used only under a doctor's supervision.

What VIAGRA Does Not Do

- VIAGRA does not cure erectile dysfunction. It is a treatment for erectile dysfunction.
- VIAGRA does not protect you or your partner from getting sexually transmitted diseases, including HIV–the virus that causes AIDS.
- VIAGRA is not a hormone or an aphrodisiac.

What To Tell Your Doctor Before You Begin VIAGRA

Only your doctor can decide if VIAGRA is right for you. VIAGRA can cause mild, temporary lowering of your blood pressure. You will need to have a thorough medical exam to diagnose your erectile dysfunction and to find out if you can safely take VIAGRA alone or with your other medicines. Your doctor should determine if your heart is healthy enough to handle the extra strain of having sex

Be sure to tell your doctor if you:

- have ever had any heart problems (e.g., angina, chest pain, heart failure, irregular heart beats, heart attack or narrowing of the aortic valve)
- have ever had a stroke
- have low or high blood pressure
- have a rare inherited eye disease called retinitis pigmentosa
- have ever had any kidney problems
- have ever had any liver problems
- have ever had any blood problems, including sickle cell anemia or leukemia
- are allergic to sildenafil or any of the other ingredients of VIAGRA tablets
- have a deformed penis, Peyronie's disease, or ever had an erection that lasted more than 4 hours
- have stomach ulcers or any types of bleeding problems
- are taking any other medicines

VIAGRA and Other Medicines

Some medicines can change the way VIAGRA works. Tell your doctor about **any medicines** you are taking. Do not start or stop taking any medicines before checking with your doctor or pharmacist. This includes prescription and nonprescription medicines or remedies.

- Remember, VIAGRA should never be used with medicines that contain nitrates (see *VIAGRA Is Not for Everyone*).
- If you are taking alpha-blocker therapy for the treatment of high blood pressure or prostate problems, you should not take a dose of greater than 25 mg of VIAGRA at the same time (within 4 hours) as you take your dose of alpha-blocker.
- If you are taking a protease inhibitor, your dose may be adjusted (please see *Finding the Right Dose for You.*)
- VIAGRA should not be used with any other medical treatments that cause erections. These treatments include pills, medicines that are injected or inserted into the penis, implants or vacuum pumps.

Finding the Right Dose for You

VIAGRA comes in different doses (25 mg, 50 mg and 100 mg). If you do not get the results you expect, talk with your doctor. You and your doctor can determine the dose that works best for you.

- Do not take more VIAGRA than your doctor prescribes.
- If you think you need a larger dose of VIAGRA, check with your doctor.
- VIAGRA should not be taken more than once a day.

If you are older than age 65, or have serious liver or kidney problems, your doctor may start you at the lowest dose (25 mg) of VIAGRA. If you are taking protease inhibitors, such as for the treatment of HIV, your doctor may recommend a 25 mg dose and may limit you to a maximum single dose of 25 mg of VIAGRA in a 48 hour period. If you are taking alpha-blocker therapy, you should not take a dose of greater than 25 mg of VIAGRA at the same time (within 4 hours) as your dose of alpha-blocker.

How To Take VIAGRA

Take VIAGRA about one hour before you plan to have sex. Beginning in about 30 minutes and for up to 4 hours, VIAGRA can help you get an erection if you are sexually excited. If you take VIAGRA after a high-fat meal (such as a cheeseburger and french fries), the medicine may take a little longer to start working. VIAGRA can help you get an erection when you are sexually excited. You will not get an erection just by taking the pill.

Possible Side Effects

Like all medicines, VIAGRA can cause some side effects. These effects are usually mild to moderate and usually don't last longer than a few hours. Some of these side effects are more likely to occur with higher doses. The most common side effects of VIAGRA are headache, flushing of the face, and upset stomach. Less common side effects that may occur are temporary changes in color vision (such as trouble telling the difference between blue and green objects or having a blue color tinge to them), eyes being more sensitive to light, or blurred vision.

In rare instances, men have reported an erection that lasts many hours. You should call a doctor immediately if you ever have an erection that lasts more than 4 hours. If not treated right away, permanent damage to your penis could occur (see *How Sex Affects the Body*).

Heart attack, stroke, irregular heart beats, and death have been reported rarely in men taking VIAGRA. Most, but not all, of these men had heart problems before taking this medicine. It is not possible to determine whether these events were directly related to VIAGRA

VIAGRA may cause other side effects besides those listed on this sheet. If you want more information or develop any side effects or symptoms you are concerned about, call your doctor.

Accidental Overdose

In case of accidental overdose, call your doctor right away.

Storing VIAGRA

Keep VIAGRA out of the reach of children. Keep VIAGRA in its original container. Store at 25°C (77°F); excursions permitted to 15-30°C (59-86°F) [see USP Controlled Room Temperature].

For More Information on VIAGRA

VIAGRA is a prescription medicine used to treat erectile dysfunction. Only your doctor can decide if it is right for you. This sheet is only a summary. If you have any questions or want more information about VIAGRA, talk with your doctor or pharmacist, visit www.viagra.com, or call 1-888-4VIAGRA

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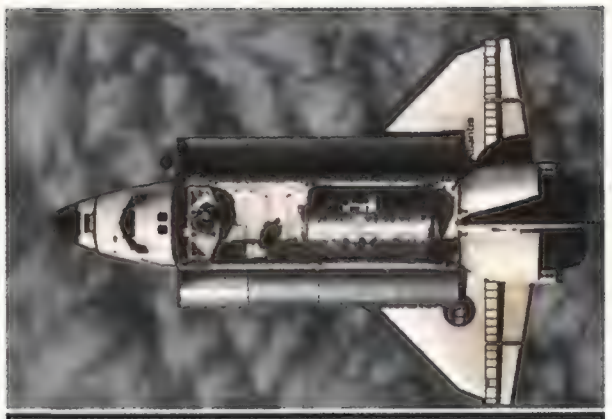

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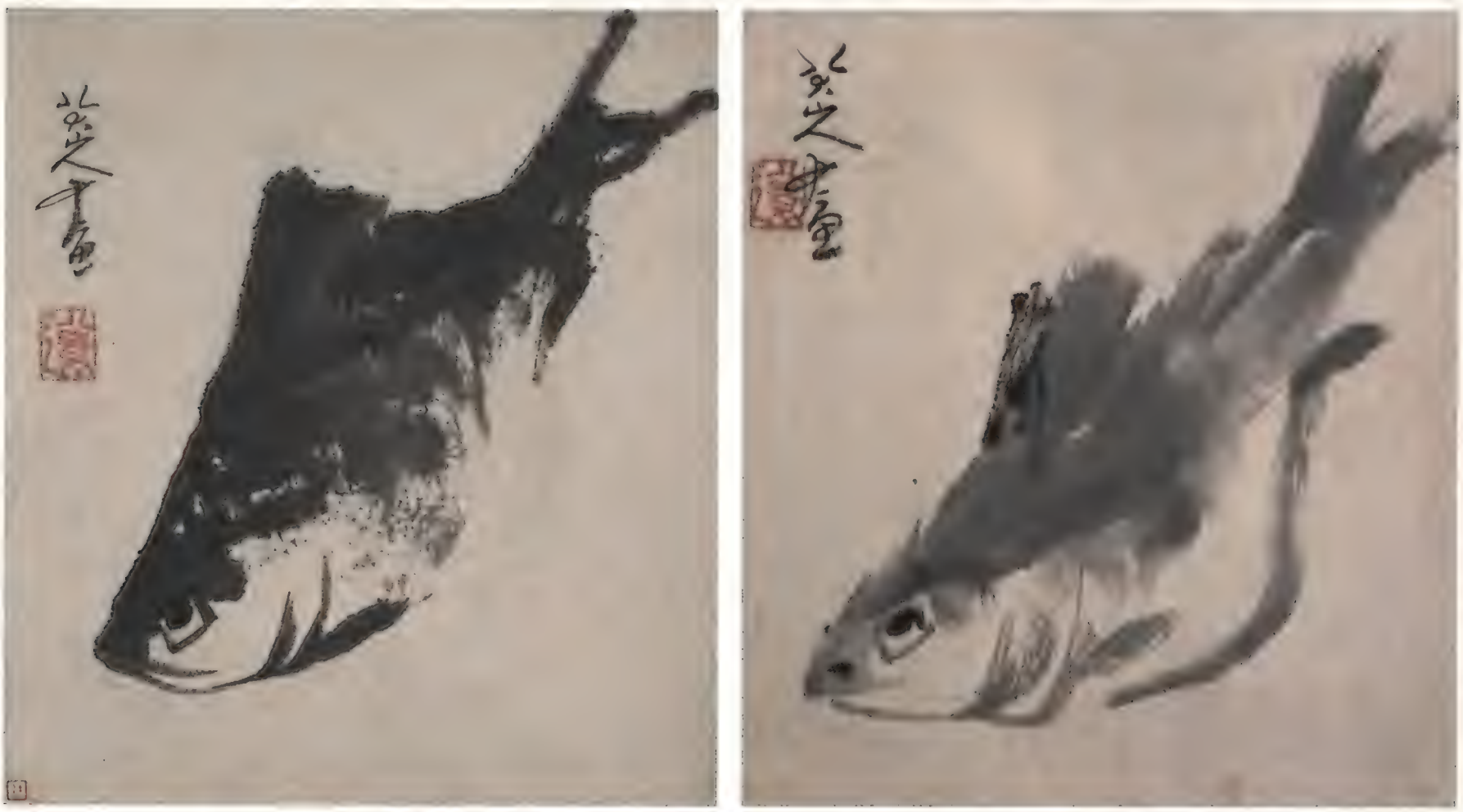


Will the real Bada please stand up? Joseph Chang, curator at Smithsonian's Sackler Gallery, reveals how to distinguish a real 17th-century Bada (left) from a 1930s fake (right): The Bada's brushstrokes are sharp; the forgery's are softer and more rounded.

FREER GALLERY OF ART, SMITHSONIAN INSTITUTION (2)

Netting Bada Shanren's Forgers

A royal, a monk and a madman, this 17th-century Chinese artist became a favorite of forgers

THE DAFFODILS are in sunny bloom on the Mall. But in the hushed, belowground spaces of the Arthur M. Sackler Gallery, curator Joseph Chang whispers to me in the dim light about forgeries and mysteries.

Chang stands before two sets of seemingly identical ink paintings, both titled *Flowers, Birds, Insects, and Fish*. One set was made by the 17th-century Chinese artist Bada Shanren. The other is a 20th-century forgery. I look carefully at the flowers. "I *think* this is the real one," I say.

"No," Chang says, pointing to the other. "*That* is."

Chang explains why. "During his middle period Bada tends to use the brush sideways. You always have a very sharp brushstroke," Chang says, pointing to the originals. He motions to the 1930s fakes by the late Zhang Daqian, one of the greatest traditional Chinese painters of the 20th century and a major forger of Bada's work. "These are softer, rounded."

The art of Bada Shanren has captivated Chang, 49, for almost 20 years. Born in Taiwan, Chang came to the United States in 1978 to study art history at the University of Kansas; this is his eighth year at the Sackler. In a way, he's been preparing for this year's two Bada shows—this one at the Sackler and another at the Freer Gallery of Art—for most of his adult life. Why Bada? "He is so mysterious," Chang says. "Scholars still haven't figured out who he was."

Here's what they do know: Bada was born in 1626. His real name is unknown; Bada Shanren is one of more than a dozen pseudonyms he used over his lifetime. He was a descendant of the Ming imperial prince Zhu Quan (1378-1448) and came from a long line of calligraphers, painters, seal-carvers and art historians. After the last Ming emperor committed suicide while a rebel army attacked Beijing, Bada, at 22, went into hiding in a Buddhist temple. For more than 30 years, he was a monk. Around 1678, he suffered some sort of mental breakdown and left the temple. He married briefly and died in 1705.

The Sackler exhibition includes 13 works Bada created after his breakdown, along with three forgeries made long after his death and two paintings by 20th-century followers.

Chang directs me to two apparently identical hanging scrolls titled *Four Geese*. Once more I guess which is genuine, and this time I'm right. In the Bada scroll, the faces of the geese are expressive (something Bada's animals were noted for), and in the forgery, a lotus is almost blobby compared with Bada's. "But what if you encountered the copy without the original to compare?" Chang asks. "Could you make a decision?"

Even for the connoisseur, it's a tough call. Take cats. Scholars have come to believe that many of the surviving feline paintings that were originally attributed to Bada are copies. Chang steers me toward one titled *Cat on a Rock,* from the estate of Bada collector and Yale University scholar Wang Fangyu, who died in 1997. "Professor Wang saw this piece in the 1960s," Chang says. "He thought it was a forgery, so he let it go. Over the decades, he studied Bada, he collected Bada, and then this piece resurfaced in the '90s and he was convinced it was original and he bought it." Experts still debate whether it is a genuine Bada Shanren.

Forgeries of Bada's work began to proliferate in the late 19th century as the Qing dynasty (1644-1912), which had forced the artist into hiding, crumbled. By the early 20th century, Bada had become one of the most copied artists of the 17th century. Disputes and consternation have haunted his collectors and scholars ever since. —*LORRAINE ADAMS*

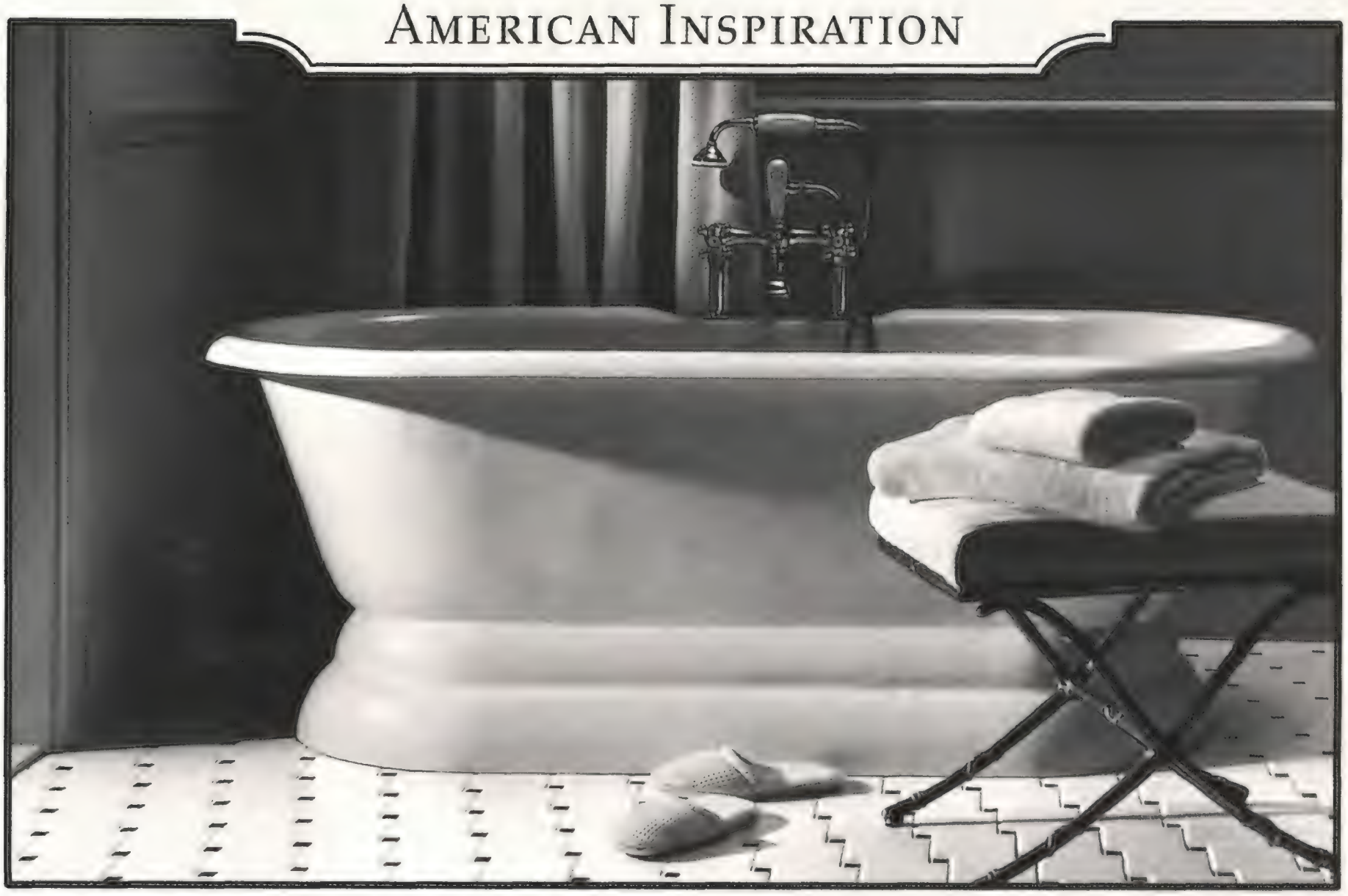
"After the Madness: The Secular Life, Art, and Imitation of Bada Shanren (1626-1705)" is at the Arthur M. Sackler Gallery until July 27. "In Pursuit of Heavenly Harmony: Paintings and Calligraphy by Bada Shanren from the Estate of Wang Fangyu and Sum Wai" is at the Freer Gallery of Art until October 12.

FROM THE ATTIC

MUSEUM MAVENS Sometime in the 1870s, Misses Sally and Nelly Hewitt, while still in pigtails, used their own money to buy a collection of 12th- to 16th-century textiles at a Paris auction. The sisters dreamed of creating a museum. Their grandfather, Peter Cooper, had always wanted one at the tuition-free college he started in Manhattan in 1859, the Cooper Union for the Advancement of Science and Art. "Quite ignorant of the immensity of the task," Nelly recalled later, "[we], whose pigtails by that time were coiled around [our] heads, asked for room" at the Cooper Union in 1896. The Museum for the Arts of Decoration opened there in 1897, with Sally, 39, and Nelly, 33, in charge. By 1910 the eccentric pair (Sally summoned her maid by hunting horn; Nelly collected erotica) had amassed 10,000 objects. For students (above, in 1915), the ironwork, bronzes, leathers, jewelry, furniture, plaster casts, paintings, engravings and drawings constituted a laboratory. Today, 6,250 design students flock yearly to the renamed Cooper-Hewitt, National Design Museum, acquired by the Smithsonian in 1967. —*BETH PY-LIEBERMAN*

COOPER-HEWITT, NATIONAL DESIGN MUSEUM, SI

American Inspiration



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The bills of male (top left) and female (top right) purple-throated carib hummingbirds (male, above right) evolved to fit their favorite plants (above left) and vice versa.

Of Beaks and Blooms

Two researchers are the first to verify Darwin's theory of coevolution in birds and flowers

JOHN KRESS, chief botanist at the National Museum of Natural History, knows plenty about heliconias, having studied the brightly colored "lobster claw" plants for more than two decades in Central and South America. So the 52-year-old scientist wasn't sure what to make of reports from amateur plant collectors on the Caribbean island of St. Lucia that the lobster claw *Heliconia bihai* was producing two different flowers. (In these plants, the "claw" is called a bract; the small flower hides inside the bract.)

Meanwhile, Ethan Temeles, 46, an Amherst College ornithologist who was studying St. Lucia's purple-throated carib hummingbirds, noticed that males weigh more than females, but their bills are shorter than females'. Typically, the larger the bird, the larger the beak. Might the hummingbirds' unusual morphology, Temeles wondered, be linked to the birds' main food, lobster claw plants?

The scientists met, and in June 2000 the "plant guy" and the "bird guy" (to borrow Kress' terms) hopped a plane to St. Lucia. In the rain forest, they observed, male hummingbirds prefer the lobster claw species *H. caribaea,* which has short, straight flowers hidden within red bracts, while females favor the longer, curved flowers of the green-bracted *H. bihai*. In both cases, bloom and bill match. But, curiously, in parts of the forest where the males' favorite food is absent, the females' flower has evolved a second form: a red-and-green bracted *H. bihai* with short, straight flowers that attract the male.

"It became immediately apparent that we were seeing a coevolutionary system," Kress says. The birds' bills and the plant's blooms had evolved together. Postulated by Darwin a century and a half ago, coevolution has been difficult to prove in nature; Kress and Temeles, whose findings appeared April 25 in *Science*, are the first to reliably record it among birds and flowers.

Which came first, changes in the beaks or in the flowers? "It happens at the same time," Kress says. This coevolutionary dance between plants and animals "shows we're all one big happy family on planet earth."

—LUBA VANGELOVA

WHO'S COUNTING?

167

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JOHN KRESS / SMITHSONIAN INSTITUTION (5); ALAIN FOSSÉ; GREPAE PAPER DOLLS COLLECTION, ARCHIVES CENTER, NMAH, SI

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Smithsonian
JUNE 2003 VOLUME 34, NUMBER 3

SAVING IRAQ'S TREASURES

As archaeologists worldwide help recover looted artifacts, they worry for the safety of the great sites of early civilization ~ BY ANDREW LAWLER

"OH YOUR CITY! OH YOUR HOUSE! OH YOUR PEOPLE!" wrote a scribe of ancient Sumer, portraying a dark time in the land that would become Iraq. That 4,000-year-old lament sounded all too contemporary in April as Baghdad mobs stormed Iraq's National Museum, broke heads off ancient statues, ransacked files and made off with an unknown number of priceless artifacts. Despite pleas from Iraqi curators, U.S. forces had no orders to intervene. "Turmoil descended upon the land," mourned the Sumerian scribe. "The statues that were in the treasury were cut down . . . there were corpses floating in the Euphrates; brigands roamed the roads."

For eight decades, archaeologists had deposited thousands of artifacts and manuscripts at the museum, documenting 10,000 years of civilization that gave the world writing, mathematics and a host of technologies—from paved roads and the wheels that ran on them to astronomical observatories. Despite 20 years of war, repression and economic sanctions in Iraq, archaeologists have continued to work the plain between the Tigris and Euphrates rivers. It was in such fabled cities as Uruk, Ashur, Babylon, Hatra and Samarra that complex agriculture, literacy and organized international trade originated. "It is a most remarkable place," says archaeologist John Russell of the Massachusetts College of Art. "The people there put together all the pieces of civilization. And it looks like us."

In March, fearing that the museum might be damaged by Coalition bombing, curators moved many of its 170,000 objects to basement storerooms and vaults. But within hours of the arrival of U.S. troops, looters and skilled thieves overwhelmed the few Iraqi guards at the museum and headed for the storerooms. Since then, several important objects have been brought back to the museum thanks to radio broadcasts urging their return, but Iraq's newly opened borders will make it easy for thieves to feed artifacts to the international antiquities market. Among the most-prized missing objects: the Warka Vase, a sacred limestone piece from Uruk; a marble head of Poseidon; and an Assyrian ivory carving. Scholars initially compared the losses to the destruction of the Library of Alexandria. On April 29, Donny George, director of research for the Iraqi State Board of Antiquities, called the looting "the crime of the century. And it's not just a loss for the Iraqi people, but a loss for all mankind."

In late April, amid reports that the losses may not be as numerous as first feared, archaeologists, conservation experts and museum representatives—working with Interpol, the FBI and Unesco—announced a plan to embargo sales of Iraqi cultural artifacts and encourage their return, and to help Iraq inventory losses, locate the stolen objects and repair damaged ones. "We have to do a lot of things simultaneously," said Unesco Director-General Koichiro Matsuura. "We *have* to make these efforts."

"Our heritage is finished," said the National Museum's deputy director Nabhal Amin (above, surveying the desecration with her husband April 13). Thousands of artifacts from ancient cities such as Hatra (right) had been stored at the museum for safekeeping.

LUCIAN PERKINS / WASHINGTON POST; P. 43 MICHAEL YAMASHITA

URUK

CITY OF THE WRITTEN WORD *4900 B.C. - A.D. 300*

URUK WAS ONE of humanity's first great urban centers—the largest city in Sumer—five millennia ago. It is mentioned in the Bible as Erech, and scholars consider it the place where writing and literacy first flourished. Barges and boats plied human-made canals bordered by boldly decorated palaces, limestone temples and luxuriant gardens, bringing grain and wool from surrounding farmlands, stone from quarries in the north and lapis lazuli from Afghanistan. Tens of thousands of people—priests, merchants, scribes, craftsmen, laborers—crowded into the mud-brick homes of this city built on the Euphrates River in southeastern Iraq.

When Uruk's first inhabitants arrived nearly 7,000 years ago, the sluggish Euphrates emptied its silt into a vast marsh—part of a series of marshes that extended to the Persian Gulf shore. The people constructed mud-and-reed huts, nearly identical to those built by today's Marsh Arabs. The huts decayed and new ones were built on the sites of the old, a layering that went on more than 1,500 years and left behind deposits some 550 feet thick.

Two millennia later, Uruk was the most impressive city of Sumer, the southern part of the land known as Mesopotamia. A temple complex celebrated the people's deities—particularly the life-giving goddess of love, Inana. Craftsmen churned out statuary and silver incense holders. Trade with communities on the Euphrates and the Gulf boomed.

To keep track of all the goods and services, merchants and priests needed a way to record contracts. The old, cumbersome method was to seal clay figures—representing goats, barley and so on—within round clay "envelopes." Around 3200 B.C., using the ubiquitous marsh reeds and clay tablets, a new class of accountant-scribes began improvising a set of symbols that we now call cuneiform, for its wedge-shaped marks. Only a select few scribes were taught the complicated system, which remained the official form of written communication in Mesopotamia for nearly 3,000 years, when the alphabet of Aramaic and other languages replaced it.

What began as a handy accounting method eventually spawned literature. The first great literary epic, written about 4,500 years ago on clay tablets that are now in the British Museum in London, tells of King Gilgamesh and his fruitless journey to find immortality.

Literacy and location no doubt gave Uruk its power over its rival Sumerian cities. "Climb upon the wall of Uruk," exclaims the narrator of the Gilgamesh epic. "Walk along it, I say; regard the foundation terrace and examine the masonry; is it not burnt brick and good?" It was good—good enough to last until German excavators uncovered that very wall a century ago.

Uruk was the birthplace of the written word, about 3200 B.C. Its fame, one scribe wrote, "like the rainbow, reaches up to the sky as the new moon standing in the heavens." A ziggurat to the sky god Anu (above, in ruins) towered over the city.

MIKE REAGAN

ANDREW LAWLER is the Boston correspondent for Science *magazine.*

NIK WHEELER

Uruk is not an easy place for archaeologists. The Euphrates long ago abandoned this site, moving its sinuous bed to the west. All around is flat plain broken only by the occasional dusty village or crumbling homestead. Midday summer temperatures can reach 120 degrees Fahrenheit, then plunge at night to near freezing. Uruk's ancient ruins, left to crumble for 1,700 years, now comprise nearly two square miles of mounds, the result of 200 generations building new streets, houses, temples and palaces on top of the old.

In this arid place, it is hard to imagine canals and gardens, especially in a city built of easily dissolved mud brick. "Archaeologists didn't think such structures were possible; too much water would destroy them," says Margarete van Ess of the German Archaeological Institute in Berlin. But she and her team, who have been digging at Uruk for the past three years, are now convinced that the city's scribes weren't just civic boosters. Using magnetometers to trace disturbances in the magnetic field underground, van Ess and colleagues have mapped what they believe are the city's ancient canals. Roads, canals and buildings have separate, distinct magnetic signatures, allowing van Ess to build a picture of Uruk. "You can visualize it as a garden city," she says. (The war suspended van Ess' work; she hopes Uruk's remote location has protected it.)

Uruk's power waned in the latter part of the third millennium B.C.; the city fell prey to invaders from the north—Akkadians, Gudeans and Elamites. "They seized your wharf and your borders," laments one ancient writer. "Shouts rang out, screams reverberated. . . . Battering rams and shields were set up, they rent its walls." A succession of rulers rebuilt the city, but by A.D. 300 it was gone.

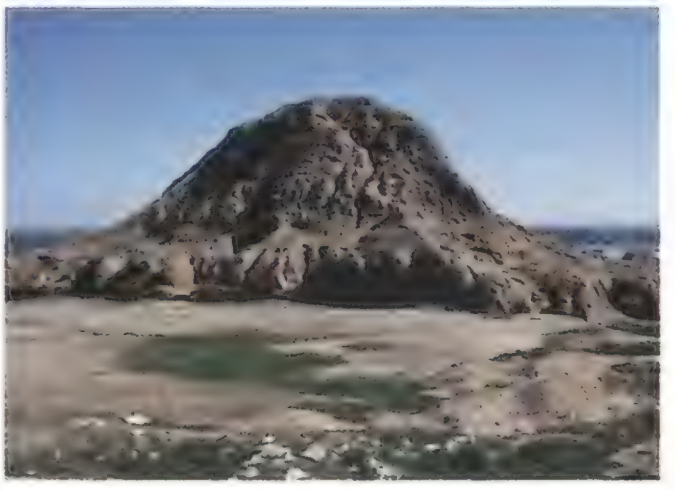
ASHUR

THE ASSYRIAN EMPIRE'S SOUL *2500 B.C. - 614 B.C.*

THE SIEGE OF ASHUR in 614 B.C. was long and bloody. The invading Medes forced the city gates, then fought the city's guards hand to hand through the narrow, crooked streets until they reached the sacred district high on a bluff above the Tigris River. Soon the pyramid-like ziggurats, temples and palaces of the Assyrian Empire's spiritual center were in flames.

It was a dramatic end to the 2,000-year-old metropolis that once rivaled Athens and Rome in grandeur and importance. Ashur, on the west bank of the Tigris in northern Iraq, was settled 4,500 years ago as a modest trading town run by an entrepreneurial people. They worshiped a pantheon of gods including one whose name they took for their city. These early Assyrians conducted a thriving trade that reached as far as today's Turkey. Often dominated by foreign rulers, they were typically more interested in profits than politics. That changed about 800 B.C., when the city's powerful families agitated for military action to protect trade routes threatened by warring neighbor states. With their superior technology and organization—including chariots, iron swords and a permanent army—the Assyrians took back the routes and got their first taste of imperial might.

Emboldened, a string of powerful rulers gobbled up smaller and weaker states, destroying the fortified town of Lachish in Judea after a long siege in 701 B.C., threatening tribes on the Iranian plateau and eventually overwhelming the Nubian masters of Egypt. By the seventh century B.C., the resulting Assyrian Empire encompassed a huge and varied population, the first great multicultural kingdom in history. Though its rulers were often rapacious, the empire was also characterized by peaceful trade, religious tolerance, canny diplomacy and forceful propaganda.



The forces of nature have eroded Ashur's great ziggurat (above), once the Assyrian Empire's religious center. Below: The city's Tabira Gate.

By 863 B.C., Assyria's capital moved from nearby Nimrud to Nineveh, but kings were still enthroned and buried at Ashur. The old city was a maze of twisting streets with elegant homes hidden behind high windowless walls. Smaller houses crowded up against temples, just as they do against mosques in old Iraqi cities today. There was a sewage system, but "the usual garbage—broken jars or bits of food—was thrown on the streets," says Peter Miglus, an archaeologist at the University of Heidelberg who has excavated sites at Ashur over the past three years. Ships and barges loaded with grain, wood, stone, leather and wine,

ERICK BONNIER (2)

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CONTRAINDICATIONS

ALLEGRA is contraindicated in patients with known hypersensitivity to any of its ingredients.

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Drug Interaction with Erythromycin and Ketoconazole

Fexofenadine hydrochloride has been shown to exhibit minimal (ca. 5%) metabolism. However, co-administration of fexofenadine hydrochloride with ketoconazole and erythromycin led to increased plasma levels of fexofenadine hydrochloride. Fexofenadine hydrochloride had no effect on the pharmacokinetics of erythromycin and ketoconazole. In two separate studies, fexofenadine hydrochloride 120 mg twice daily (two times the recommended twice daily dose) was co-administered with erythromycin 500 mg every 8 hours or ketoconazole 400 mg once daily under steady state conditions to normal, healthy volunteers (n=24, each study). No differences in adverse events or QT_c interval were observed when patients were administered fexofenadine hydrochloride alone or in combination with erythromycin or ketoconazole. The findings of these studies are summarized in the following table:

Effects on steady-state fexofenadine hydrochloride pharmacokinetics after 7 days of co-administration with fexofenadine hydrochloride 120 mg every 12 hours (two times the recommended twice daily dose) in normal volunteers (n=24)

Concomitant Drug	$C_{max,ss}$ *(Peak plasma concentration)*	$AUC_{(0-12h)}$ *(Extent of systemic exposure)*
Erythromycin (500 mg every 8 hrs)	+82%	+109%
Ketoconazole (400 mg once daily)	+135%	+164%

The changes in plasma levels were within the range of plasma levels achieved in adequate and well-controlled clinical trials.

The mechanism of these interactions has been evaluated in *in vitro, in situ,* and *in vivo* animal models. These studies indicate that ketoconazole or erythromycin co-administration enhances fexofenadine gastrointestinal absorption. *In vivo* animal studies also suggest that in addition to increasing absorption, ketoconazole decreases fexofenadine hydrochloride gastrointestinal secretion, while erythromycin may also decrease biliary excretion.

Drug Interactions with Antacids

Administration of 120 mg of fexofenadine hydrochloride (2 x 60 mg capsule), within 15 minutes of an aluminum and magnesium containing antacid (Maalox®), decreased fexofenadine AUC by 41% and C_{max} by 43%. ALLEGRA should not be taken closely in time with aluminum and magnesium containing antacids.

Carcinogenesis, Mutagenesis, Impairment of Fertility

The carcinogenic potential and reproductive toxicity of fexofenadine hydrochloride were assessed using terfenadine studies with adequate fexofenadine hydrochloride exposure (based on plasma area-under-the-concentration vs. time [AUC] values). No evidence of carcinogenicity was observed in an 18-month study *in mice* and *in a 24-month study in rats* at oral doses up to 150 mg/kg of terfenadine (which led to fexofenadine exposures that were respectively approximately 3 and 5 times the exposure from the maximum recommended daily oral dose of fexofenadine hydrochloride in adults and children).

In *in vitro* (Bacterial Reverse Mutation, CHO/HGPRT Forward Mutation, and Rat Lymphocyte Chromosomal Aberration assays) and *in vivo* (Mouse Bone Marrow Micronucleus assay) tests, fexofenadine hydrochloride revealed no evidence of mutagenicity.

In rat fertility studies, dose-related reductions in implants and increases in postimplantation losses were observed at an oral dose of 150 mg/kg of terfenadine (which led to fexofenadine hydrochloride exposures that were approximately 3 times the exposure of the maximum recommended daily oral dose of fexofenadine hydrochloride in adults).

Pregnancy

Teratogenic Effects: Category C. There was no evidence of teratogenicity in rats or rabbits at oral doses of terfenadine up to 300 mg/kg (which led to fexofenadine exposures that were approximately 4 and 31 times, respectively, the exposure from the maximum recommended daily oral dose of fexofenadine in adults).

There are no adequate and well controlled studies in pregnant women. Fexofenadine should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

Nonteratogenic Effects. Dose-related decreases in pup weight gain and survival were observed in rats exposed to an oral dose of 150 mg/kg of terfenadine (approximately 3 times the maximum recommended daily oral dose of fexofenadine hydrochloride in adults based on comparison of fexofenadine hydrochloride AUCs).

Nursing Mothers

There are no adequate and well-controlled studies in women during lactation. Because many drugs are excreted in human milk, caution should be exercised when fexofenadine hydrochloride is administered to a nursing woman.

Pediatric Use

The recommended dose in patients 6 to 11 years of age is based on cross-study comparison of the pharmacokinetics of ALLEGRA in adults and pediatric patients and on the safety profile of fexofenadine hydrochloride in both adult and pediatric patients at doses equal to or higher than the recommended doses.

The safety of ALLEGRA tablets at a dose of 30 mg twice daily has been demonstrated in 438 pediatric patients 6 to 11 years of age in two placebo-controlled 2-week seasonal allergic rhinitis trials. The safety of ALLEGRA for the treatment of chronic idiopathic urticaria in patients 6 to 11 years of age is based on cross-study comparison of the pharmacokinetics of ALLEGRA in adult and pediatric patients and on the safety profile of fexofenadine in both adult and pediatric patients at doses equal to or higher than the recommended dose.

The effectiveness of ALLEGRA for the treatment of seasonal allergic rhinitis in patients 6 to 11 years of age was demonstrated in one trial (n=411) in which ALLEGRA tablets 30 mg twice daily significantly reduced total symptom scores compared to placebo, along with extrapolation of demonstrated efficacy in patients ages 12 years and above, and the pharmacokinetic comparisons in adults and children. The effectiveness of ALLEGRA for the treatment of chronic idiopathic urticaria in patients 6 to 11 years of age is based on an extrapolation of the demonstrated efficacy of ALLEGRA in adults with this condition and the likelihood that the disease course, pathophysiology and the drug's effect are substantially similar in children to that of adult patients. The safety and effectiveness of ALLEGRA in pediatric patients under 6 years of age have not been established.

Geriatric Use

Clinical studies of ALLEGRA tablets and capsules did not include sufficient numbers of subjects aged 65 years and over to determine whether this population responds differently from younger patients. Other reported clinical experience has not identified differences in responses between the geriatric and younger patients. This drug is known to be substantially excreted by the kidney, and the risk of toxic reactions to this drug may be greater in patients with impaired renal function. Because elderly patients are more likely to have decreased renal function, care should be taken in dose selection, and may be useful to monitor renal function. (See CLINICAL PHARMACOLOGY.)

ADVERSE REACTIONS

Seasonal Allergic Rhinitis

Adults. In placebo-controlled seasonal allergic rhinitis clinical trials in patients 12 years of age and older, which included 2461 patients receiving fexofenadine hydrochloride capsules at doses of 20 mg to 240 mg twice daily, adverse events were similar in fexofenadine hydrochloride and placebo-treated patients. All adverse events that were reported by greater than 1% of patients who received the recommended daily dose of fexofenadine hydrochloride (60 mg capsules twice daily), and that were more common with fexofenadine hydrochloride than placebo, are listed in Table 1.

In a placebo-controlled clinical study in the United States, which included 570 patients aged 12 years and older receiving fexofenadine hydrochloride tablets at doses of 120 or 180 mg once daily, adverse events were similar in fexofenadine hydrochloride and placebo-treated patients. Table 1 also lists adverse experiences that were reported by greater than 2% of patients treated with fexofenadine hydrochloride tablets at doses of 180 mg once daily and that were more common with fexofenadine hydrochloride than placebo.

The incidence of adverse events, including drowsiness, was not dose-related and was similar across subgroups defined by age, gender, and race.

Table 1

Adverse experiences in patients ages 12 years and older reported in placebo-controlled seasonal allergic rhinitis clinical trials in the United States

Twice daily dosing with fexofenadine capsules at rates of greater than 1%

Adverse experience	*Fexofenadine 60 mg Twice Daily (n=679)*	*Placebo Twice Daily (n=671)*
Viral Infection (cold, flu)	2.5%	1.5%
Nausea	1.6%	1.5%
Dysmenorrhea	1.5%	0.3%
Drowsiness	1.3%	0.9%
Dyspepsia	1.3%	0.6%
Fatigue	1.3%	0.9%

Once daily dosing with fexofenadine hydrochloride tablets at rates of greater than 2%

Adverse experience	*Fexofenadine 180 mg once daily (n=283)*	*Placebo (n=293)*
Headache	10.6%	7.5%
Upper Respiratory Tract Infection	3.2%	3.1%
Back Pain	2.8%	1.4%

The frequency and magnitude of laboratory abnormalities were similar in fexofenadine hydrochloride and placebo-treated patients.

Pediatric. Table 2 lists adverse experiences in patients aged 6 to 11 years of age which were reported by greater than 2% of patients treated with fexofenadine hydrochloride tablets at a dose of 30 mg twice daily in placebo-controlled seasonal allergic rhinitis studies in the United States and Canada that were more common with fexofenadine hydrochloride than placebo.

Table 2

Adverse experiences reported in placebo-controlled seasonal allergic rhinitis studies in pediatric patients ages 6 to 11 in the United States and Canada at rates of greater than 2%

Adverse experience	*Fexofenadine 30 mg twice daily (n=209)*	*Placebo (n=229)*
Headache	7.2%	6.6%
Accidental Injury	2.9%	1.3%
Coughing	3.8%	1.3%
Fever	2.4%	0.9%
Pain	2.4%	0.4%
Otitis Media	2.4%	0.0%
Upper Respiratory Tract Infection	4.3%	1.7%

Chronic Idiopathic Urticaria

Adverse events reported by patients 12 years of age and older in placebo-controlled chronic idiopathic urticaria studies were similar to those reported in placebo-controlled seasonal allergic rhinitis studies. In placebo-controlled chronic idiopathic urticaria clinical trials, which included 726 patients 12 years of age and older receiving fexofenadine hydrochloride tablets at doses of 20 to 240 mg twice daily, adverse events were similar in fexofenadine hydrochloride and placebo-treated patients. Table 3 lists adverse experiences in patients aged 12 years and older which were reported by greater than 2% of patients treated with fexofenadine hydrochloride 60 mg tablets twice daily in controlled clinical studies in the United States and Canada and that were more common with fexofenadine hydrochloride than placebo. The safety of fexofenadine hydrochloride in the treatment of chronic idiopathic urticaria in pediatric patients 6 to 11 years of age is based on the safety profile of fexofenadine hydrochloride in adults and adolescent patients at doses equal to or higher than the recommended dose (see Pediatric Use).

Table 3

Adverse experiences reported in patients 12 years and older in placebo-controlled chronic idiopathic urticaria studies in the United States and Canada at rates of greater than 2%

Adverse experience	*Fexofenadine 60 mg twice daily (n=186)*	*Placebo (n=178)*
Back Pain	2.2%	1.1%
Sinusitis	2.2%	1.1%
Dizziness	2.2%	0.6%
Drowsiness	2.2%	0.0%

Events that have been reported during controlled clinical trials involving seasonal allergic rhinitis and chronic idiopathic urticaria patients with incidences less than 1% and similar to placebo and have been rarely reported during postmarketing surveillance include: insomnia, nervousness, and sleep disorders or paroniria. In rare cases, rash, urticaria, pruritus and hypersensitivity reactions with manifestations such as angioedema, chest tightness, dyspnea, flushing and systemic anaphylaxis have been reported.

OVERDOSAGE

Reports of fexofenadine hydrochloride overdose have been infrequent and contain limited information. However, dizziness, drowsiness, and dry mouth have been reported. Single doses of fexofenadine hydrochloride up to 800 mg (six normal volunteers at this dose level), and doses up to 690 mg twice daily for 1 month (three normal volunteers at this dose level) or 240 mg once daily for 1 year (234 normal volunteers at this dose level) were administered without the development of clinically significant adverse events as compared to placebo.

In the event of overdose, consider standard measures to remove any unabsorbed drug. Symptomatic and supportive treatment is recommended.

Hemodialysis did not effectively remove fexofenadine hydrochloride from blood (1.7% removed) following terfenadine administration.

No deaths occurred at oral doses of fexofenadine hydrochloride up to 5000 mg/kg in mice (110 times the maximum recommended daily oral dose in adults and 200 times the maximum recommended daily oral dose in children based on mg/m^2) and up to 5000 mg/kg in rats (230 times the maximum recommended daily oral dose in adults and 400 times the maximum recommended daily oral dose in children based on mg/m^2). Additionally, no clinical signs of toxicity or gross pathological findings were observed. In dogs, no evidence of toxicity was observed at oral doses up to 2000 mg/kg (300 times the maximum recommended daily oral dose in adults and 530 times the maximum recommended daily oral dose in children based on mg/m^2).

DOSAGE AND ADMINISTRATION

Seasonal Allergic Rhinitis

Adults and Children 12 Years and Older. The recommended dose of ALLEGRA is 60 mg twice daily, or 180 mg once daily. A dose of 60 mg once daily is recommended as the starting dose in patients with decreased renal function (see CLINICAL PHARMACOLOGY).

Children 6 to 11 Years. The recommended dose of ALLEGRA is 30 mg twice daily. A dose of 30 mg once daily is recommended as the starting dose in pediatric patients with decreased renal function (see CLINICAL PHARMACOLOGY).

Chronic Idiopathic Urticaria

Adults and Children 12 Years and Older. The recommended dose of ALLEGRA is 60 mg twice daily. A dose of 60 mg once daily is recommended as the starting dose in patients with decreased renal function (see CLINICAL PHARMACOLOGY).

Children 6 to 11 Years. The recommended dose of ALLEGRA is 30 mg twice daily. A dose of 30 mg once daily is recommended as the starting dose in pediatric patients with decreased renal function (see CLINICAL PHARMACOLOGY).

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brought from all over the empire, crowded the massive quays on the Tigris River.

By 700 B.C., the city boasted 34 major temples. The sacred district of Ashur was at the northeast tip, on a spur of rock extending into the Tigris. Here were the ancient sanctuaries of the goddess Inana—the same goddess revered in Uruk—and of the god Ashur. Three ziggurats rose into the sky far above the fast-moving river below. Seen from the Tigris, the city was a dazzling sight. It seemed impregnable, too, located on a high bluff, with two and a half miles of stout walls. Armed guards, wearing the long coiffed beards favored by Assyrian men, were stationed at the city gates. Yet in 614 B.C., the Medes—a people from today's Iran—attacked the Assyrian Empire and laid waste to fortified Ashur. Many scholars have surmised that the Medes launched a surprise attack on the city when the fierce Assyrian military was fighting elsewhere.

But Miglus and his team, along with Iraqi and other Western researchers, have put together an alternative description of Ashur's final days. They have found an unfinished tunnel most likely built by the Medes to penetrate the city's formidable defense; that the Medes had time to build a tunnel suggests the siege was quite long. Based on his excavations, Miglus paints a stark picture of Ashur's preparations for that siege and its terrifying end. He believes the city's inhabitants converted the vast palace cellars into granaries, as if to wait out the usurpers, and that Ashur's final hours were a chaos of street barricades, beheaded corpses and burned buildings.

Unfortunately, the ancient settlement is once again under siege. Two years ago, Saddam Hussein's government began work on a dam that would flood much of Ashur and all of the valley below, which contains more than 60 important Assyrian sites, most of which have never been surveyed or excavated. The news devastated Miglus, who worked more than ten years to gain permission to dig at Ashur. "I couldn't believe it," he says. If the dam is completed, the vast lake would lap at Miglus' research station—now high on a bluff above the Tigris—and Ashur would turn into a few muddy islands poking up from the reservoir. Statuary, libraries of cuneiform tablets, and hundreds of unexcavated buildings will melt into mud if the plan goes forward.

Even so, the huge dam, if completed in 2006 as scheduled, would bring water and electricity to Baghdad. Water in the Tigris is low, the result of a series of Turkish dams upstream that siphon it off before it can reach Iraq. And in this poor region, the construction of the dam would provide hundreds of much-needed jobs.

Before the war, Iraqi officials indicated they would build a cofferdam that would surround the entire site and protect it from the rising water, but the costs for such a project would be enormous. When a Unesco team visited Iraq last November, work on the dam was well under way, with no plans for a protective structure. Donny George says construction has stopped; whether it will begin again no one can say. If completed, the dam's rising waters will wipe out all traces of ancient Assyria's heart.

Tracking the Plunder

Within days of the museum thefts, experts feared that artifacts had crossed Iraq's newly opened borders and were being offered for sale

Recovering missing and looted artifacts from the so-called cradle of civilization means staying one step ahead of a thriving black market for antiquities. A global coalition of experts and archaeologists has pledged to help Iraq rebuild its plundered cultural institutions, inventory the losses and assist in restoring damaged antiquities. At press time, the sacred 3000 B.C. Warka Vase (right), with carved scenes of Uruk, was still missing from the Baghdad museum. The fates of the cuneiform stela (above) from Babylon, a 1700 B.C. terra-cotta cat (below right) and an A.D. 100-200 painted stone relief (below) were unknown.

ERICK BONNIER; ERICH LESSING / ART RESOURCE, NEW YORK; ERICK BONNIER (2)

BABYLON

GATE OF THE GODS *1800 B.C. - A.D. 75*

FEW WORDS EVOKE as many images of ancient decadence, glory and prophetic doom as does "Babylon." Yet the actual place—50 miles south of Baghdad—is flat, hot, deserted and dusty. Next to a crumbling small-scale reconstruction of the Ishtar Gate, its once-vivid blue tiles faded and its parade of animal reliefs scarred and broken, a forlorn gift shop offers miniature plastic statues of the famous Lion of Babylon and T-shirts bearing faux cuneiform. The real Ishtar Gate, built by Nebuchadnezzar II around 600 B.C., was hauled off to Berlin by archaeologists a century ago. Visitors must visualize among the low mounds of rubble a vast and cosmopolitan city, holy as Mecca, wealthy as Zurich, as magnificently planned as Washington. The Tower of Babel is now a swampy pit. Looming above the sad heaps of brick is an imperious palace built in 1987 by Saddam Hussein, who often expressed a kinship with Nebuchadnezzar.

By that king's time (604-562 B.C.), Babylon already had a complex history stretching 1,150 years to King Hammurabi, who posted a legal code with 282 laws around 1750 B.C.

Nebuchadnezzar inherited a city free of Assyrian domination—Nineveh and Ashur lay in ruins to the north—and not as yet threatened by the growing powers of Persia on the Iranian plateau to the east. Babylon's rule stretched from the foot of that plateau across Mesopotamia to the Mediterranean Sea.

"Babylon was a city where living was beautiful, so the cuneiform tablets tell us," says Giovanni Bergamini, an archaeologist at Italy's University of Turin who excavated the site before the first Gulf War. "It was a free city for refugees, a holy city, a kind of Jerusalem." The word "Babylon" itself means "gate of the gods." Scores of temples served by a caste of priests catered to the Mesopotamian deities and their followers. Stone slabs paved wide streets; high gates and walls defined the 1.6-square-mile rectangle of the city; and a massive bridge spanned the Euphrates, which flowed through the heart of the city.

The most elaborate temple, in the city center, was dedicated to Marduk, the patron god of Babylon, whose name was too holy to speak. Nearby, rising 300 feet, was the seven-stepped and brightly painted ziggurat called Etemenanki—"the foundation of heaven and earth"—which the Jews dubbed the Tower of Babel. During the spring festival—a sort of Mardi Gras and Holy Week rolled into one—the king lay aside his crown and prostrated himself before Marduk's statue. Then the high priest slapped the king to expunge his sins. Pilgrims thronged the streets, and statues of gods brought by people from all over Mesopotamia were carried by singing crowds, taken to the river and placed on boats, then ceremoniously carried in chariots to a special temple in the north part of the city.

Amid all this celebration was the unrelenting clatter of business. Bergamini has excavated areas that may have served as banks. "This was a trading city," he says. "Caravans and ships brought cargoes of imported woods, silver, gold, bronze, ivory, frankincense, marble, wine and grains, vegetables and fruits of all kinds."

Holy and secular buildings alike were decorated in bricks brightly glazed in bold blues, reds and greens. Whimsical animal figures—strutting long-necked dragons and elegant bulls—adorned temples, gates and palaces. These animals "are symbolic and magical," says the Italian archaeologist, and contrast starkly with the severe and warlike stone friezes that lined the walls of Assyrian palaces.

Learning was highly prized, and astronomy and mathematics were especially esteemed. "There was an ideology of freedom, of justice, of peace," Bergamini says. As the prophet Daniel notes, Babylon boasted a concentration of sages supported by the palace and temples. But ideology did not always match reality. The Babylonian army sacked Jerusalem (among many cities), blinded a rebellious Jewish prince, en-

The original Ishtar Gate (left, a 1980s replica) was moved to Berlin in 1903. It was built in 572 B.C.; both Nebuchadnezzar II and the prophet Daniel would have walked through it.

NIK WHEELER; P. 51 MICHAEL YAMASHITA; NIK WHEELER

slaved countless peoples and fought viciously along Babylonia's shifting borders. Yet foreigners such as Daniel (who impressed the imperial court with his prophetic interpretations of Nebuchadnezzar's dreams) rose to high levels in the government, despite their original status as captives.

After Nebuchadnezzar's death in 562 B.C., a seven-year struggle for power commenced. Nabonidus gained control, but the new king became devoted to the moon god Sin—an unpopular deity among local conservatives—and retreated to a distant desert town. Meanwhile, Persia grew stronger and more covetous of its neighbor.

According to the Greek historian Herodotus, the Persian army led by Cyrus surprised Babylon's oblivious inhabitants. Even as the enemy breached the city's outer defenses, Herodotus wrote, the people "engaged in a festival, continued dancing and reveling." The Persian king entered Babylon in triumph, forbade looting and freed the Jews. He then went on to greater conquests as far away as Greece, and Persian and Greek foreigners (Alexander the Great died there) oversaw the slow decay of Babylon. Around A.D. 75, the last generation of priests recorded astronomical observations in cuneiform, and the ruined city was abandoned.

The most recent attempt to raise Babylon took place in 1987 when, under Saddam Hussein's orders, parts of Nebuchadnezzar's palace were rebuilt. But the salty soil and rising water table have played havoc with the new walls, causing them to crack and twist the fragile, ancient foundations below. Bergamini says he and other archaeologists could not prevent this folly. "It's complete nonsense—the right thing is to destroy the [new] walls." It won't be hard to distinguish old from new: each new brick is stamped with Saddam's name. And Saddam is not the only one to have put his mark on this place: in April, at least one U.S. tank rolled over some of the ancient mounds on its way to Baghdad.

The 14th-century B.C. Lion of Babylon (above) was part of the art collection of Nebuchadnezzar II. Saddam ordered restoration of the city ruins (below), harming the ancient foundations.

HATRA

CITY OF OUR LORD AND LADY *400 B.C. - A.D. 300*

AS BABYLON CRUMBLED back into dust, a lesser-known city 225 miles northwest was breaking with the ancient religious traditions of Mesopotamia. On a bleak plain west of the Euphrates, Hatra began as a watering hole with perhaps a small temple. At its height in the first and second centuries A.D., Hatra encompassed 750 acres, an elegant city clustered around a sacred core of three large temples, all protected by a city wall still visible today.

This is a strangely constructed place. With its stone columns, graceful arches and classical statues, it resembles a remarkably preserved Roman city. But a closer look reveals that the arches lead to open pavilions reminiscent of the large tents favored by Parthian rulers who came from Persia in A.D. 100. Though Hatra sat astride the two great empires of the day—Roman and Parthian—the old Mesopotamian styles are still evident. One temple has an off-center entrance, designed so commoners outside could not glimpse the sacred interior, which is typical also of temples in Uruk, Ashur and Babylon. The inscriptions in Aramaic—the language of the region as well as of Christ—indicate the city was ruled by the "King of the Arabs," a reference to nomadic desert tribes who were spreading north and settling down.

This unusual mix gives Hatra a cosmopolitan air—Rome's artistic flair meets Arab nomads and Persian style with a hint of Babylonia. "It's very complex," says Roberta Venco Ricciardi, an archaeologist at the University of Turin in Italy who dug at Hatra in the 1980s and the late '90s. There is little about Hatra in historical records, but Ricciardi and Iraqi ar-

Though Hatra is often compared to an ancient Roman city, a closer look reveals open courts and archways (right and below right) in the Persian style. Hairstyles, hats and clothing on statuary (below) also reflect an Eastern influence on this well-planned religious and trading town. By A.D. 300, it was in ruins.

DAVID LEES / CORBIS; MICHAEL YAMASHITA / WOODFIN CAMP & ASSOCIATES

chaeologists are providing a fuller picture. In one patrician home she excavated, for example, "there were paintings everywhere," she says. The walls were covered with hunting scenes of gazelles and wild boars, in vibrant reds, yellows and blacks. Those paintings, she adds, were stored at the site, rather than in Baghdad, so they might still be safe.

"I believe this was a very important religious center," Ricciardi says. "There was trade, but that was not the main reason for Hatra's success." Scholars are stumped as to what the pilgrims worshiped. Inscriptions offer only hints: the pantheon honored "Our Lord, Our Lady and the Son of our Lords." Ricciardi believes "Our Lord" is a reference to Shamash, a popular sun god of the Sumerians; no one knows the identities of the other two deities. One Iraqi archaeologist speculates that the cult came from Arabia; a passageway that wraps around one temple, he says, is a sign that worshipers circled the sanctuary—like the circling of the Kaaba shrine in the plaza in Mecca, an ancient Arab practice that predates Muhammad's time.

After A.D. 300, Hatra was abandoned. Iraqi archaeologists have found tenuous evidence that the northern gate of the city was destroyed at about that time. It seems likely that Sassanian warriors—yet another wave of invaders from the Iranian plateau—swept down on the city. Their new empire, with its state religion of Zoroastrianism, a monotheistic belief system from the highlands of Iran and Afghanistan that emphasized the fight between good and evil, may have looked unkindly on a major gathering place for infidels, says Ricciardi. Whatever the cause, Hatra subsided back into the desert. Its remote location has left it mostly undisturbed.

MICHAEL YAMASHITA

SAMARRA

THE CALIPH'S VERSAILLES *A.D. 836 - 892*

THE EXTRAORDINARY MUD-BRICK spiral minaret of Samarra rises 170 feet into the bright blue sky of north-central Iraq, 80 miles northwest of Baghdad. Built next to a huge mosque in A.D. 850, when Europeans were still erecting crude churches, the minaret provides a glimpse into the glory of one of the most sprawling cities of the premodern era and one of the richest archaeological sites in the world. Covering almost 20 square miles, Samarra grew up virtually overnight into the proud capital of the Abbasid caliphs (descendants of Abbas, the uncle of Muhammad), only to fall into decay less than a century later.

"A mushroom city," is how Alastair Northedge, an archaeologist at the University of Paris, describes the once-grand metropolis of some 200,000 people, more than 20,000 houses, hundreds of military barracks and dozens of palaces, all built in two years. He is just completing a 20-year study of Samarra, using British aerial photographs from the 1950s, U.S. spy-satellite images from the '60s and his own ground surveys. "In Samarra, everything is big, and there are always more of them," Northedge says of the city's mosques and palaces.

Until the ninth century, Samarra, with its shallow soil and nearby deserts, had been an unappealing place for everyone but Sassanian kings (A.D. 224 to 640) on the hunt. Four huge hunting reserves—one with mud walls 12 miles long—were stocked with gazelles, wild donkeys, lions and other prey. "It was like Versailles," says Northedge. "The animals were shuffled in front of the king, who then massacred them."

Hunting also drew one caliph who lived in Baghdad three centuries later. In A.D. 834 Caliph al-Mu'tasim left behind the rich but crowded city and moved northwest to the open spaces of Samarra, a word meaning "he who sees it is delighted." But his move wasn't just for the hunt. His troops, composed in part of rowdy Turks from central Asia, were causing trouble in Baghdad, and the move eased the tension.

For the next two years, a frenzy of construction overtook the plain adjoining the Tigris River. Vast boulevards stretched for miles to provide easy movement of the caliph's military force of more than 50,000 Turks, Egyptians, Iranians and Arabs. Soldiers brought their wives and families, and traders brought their wares. Al-Mu'tasim and his successors built palaces with huge courtyards and fountains. Poets,

Samarra's Great Mosque (with its spiral minaret, Melwiya, above) and restored ninth-century A.D. palace (left) are among the world's great architectural treasures. Though many of Samarra's Sunni residents were supportive of Saddam Hussein, they readily capitulated to U.S. forces in April's fighting.

ERICK BONNIER

DAVID LEES / CORBIS

some of whom are famous even today in the Arab world, flocked to the new pleasure gardens to write about the glory of Allah and of love and beauty. Others such as Abu al-'Anbas al-Saymari praised wine and wrote enthusiastically about erotic pleasures and aids to digestion. Artisans created fantastic stucco friezes with abstract designs. Glazed tiles, which became a staple of Islamic buildings, were first made here. Blue glass panels—a great novelty—decorated the walls of the central mosque, and pilgrims marveled to see one another through this magical material.

Unlike Louis XIV at Versailles, Al-Mu'tasim didn't drive the state into bankruptcy in constructing Samarra. Archaeologists and historians estimate that a fifth or less of the state's annual revenues went to the project. Lavish parties consumed a large share of state funds: one of the most elaborate palaces in Samarra, for example, cost only a quarter of what was paid for one especially elaborate circumcision party for a prince. A portion of Al-Mu'tasim's palace has been restored by Saddam's government. Arched chambers radiate out from a round pool 215 feet in diameter, whose waters must have provided a welcome sanctuary for courtiers during the intense summer heat. But after A.D. 860, succession disputes, assassinations and troop unrest brought an end to Samarra.

"This is one of the great Islamic creations," says Northedge. Sadly, some of Samarra's spectacular artifacts were in the National Museum when it was looted in April and might be lost forever. But much of the city remains unexcavated. Archaeologists can only hope that the remaining examples from this era of Iraq's rich artistic and intellectual life are safely hidden. ○

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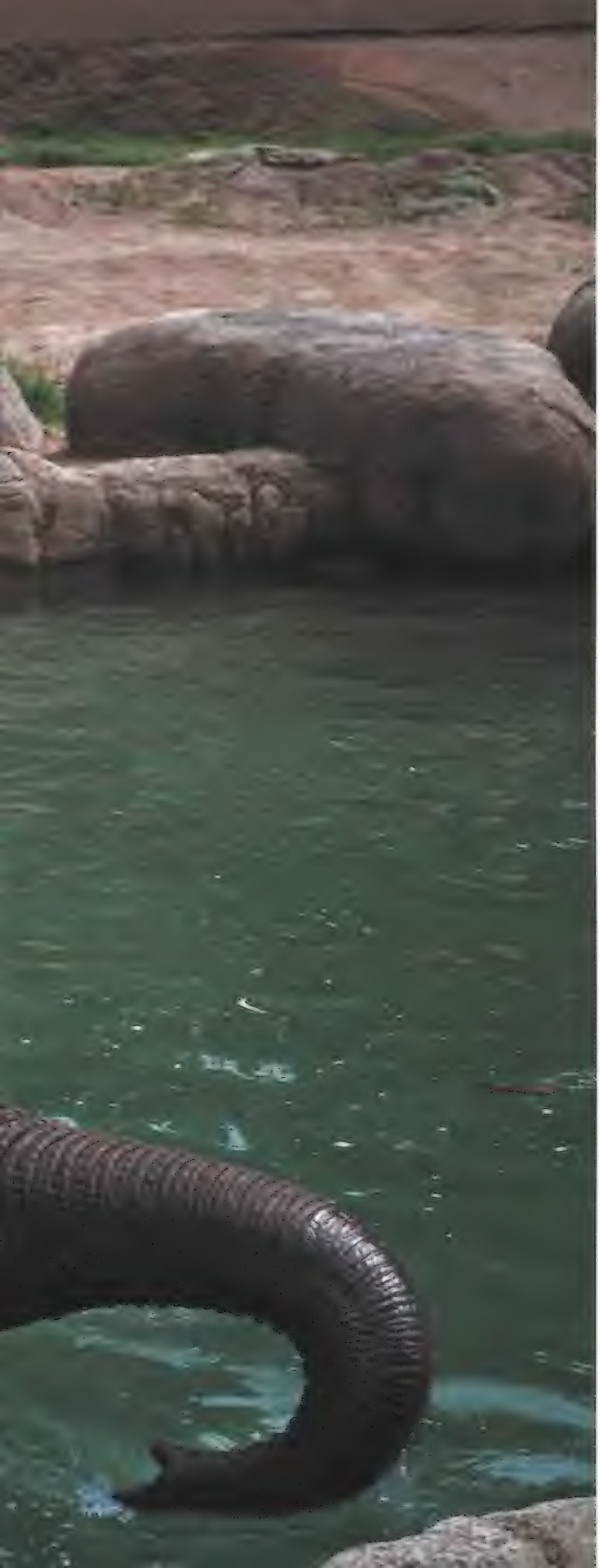


Elephant researchers believe they can boost captive-animal reproduction rates and reverse a potential population crash in zoos

BY KARA PLATONI

A LITTLE BEFORE 5:30 one August morning two years ago, workers at the Oakland Zoo began calling colleagues at home to hurry in. For more than a month, staff and volunteers had held a round-the-clock vigil watching a pregnant 24-year-old African elephant on a video monitor, and now they saw the time had come. The elephant, Lisa, heaved to her feet and released an enormous amount of water onto the straw-covered floor. Her 22-month pregnancy was over.

An elephant birth in captivity is unusual and highly anticipated: of 17 African elephants born in North America since 1995, only 6 survive. (Only 24 of 38 Asian elephants born during the same period survive.) So when the 327-pound baby arrived three and a half hours after Lisa's water broke, Oakland Zoo workers were ready. They quickly checked the calf's heartbeat, took a blood sample and swabbed fluids from his dark gray skin. From his first moments, the calf charmed the keepers, waving his tiny trunk with animation. The skin

Oakland Zoo director Joel Parrott (with elephant manager Colleen Kinzley, above) still wonders what, if anything, might have prevented Lisa (left, foreground) from fatally injuring her calf.

"The Wiese study woke up the elephant community to how much work and how little time we have," says Janine Brown.

around his eyes was tinged a light pink, making him look as though he had stayed up too late. In his curiosity to explore his surroundings, the calf strained against the two yellow fabric strips slung under his belly to help him stand. "Lisa touched and smelled the calf and watched to see what would happen," recalls the Oakland Zoo's elephant manager, Colleen Kinzley. "She was very excited."

The staff named the baby Dohani, Swahili for "smoke," in honor of his father, Smokey, who lived at the Oakland Zoo until he died of chronic wasting disease earlier that year. "From the very first moment that Lisa had the calf with her, we could not have hoped for it to have gone better," reports Kinzley. Lisa appeared to adapt to motherhood, following her baby everywhere, often touching him. Then, on the 11th day, keepers found Dohani dead on the floor of the elephant room with a puncture wound to the chest. Lisa stood over his body for hours, refusing to move.

This tragedy highlights the challenge of breeding elephants in captivity. Was Dohani's loss just an accident, perhaps the result of an inexperienced 9,000-pound mother misjudging her strength while nudging her calf? Or had something spooked Lisa and caused her to impale Dohani? Could the zookeepers have prevented Dohani's death, perhaps by teaching Lisa a broader array of parenting skills?

Lisa proved to be a doting mother (above, with 8-day-old Dohani), following her son everywhere around the elephant enclosure at the Oakland Zoo. Three days later he was dead.

Such questions have broad importance because of predictions that North America's captive elephant population simply can't sustain itself. If current trends continue, in 50 years there will be only four female African elephants young enough to breed at zoos and parks, according to a 2000 study by Robert Wiese, director of animal collections at Texas' Fort Worth Zoo. (About 225 African and 284 Asian elephants now reside in North America.) "The Wiese study woke up the elephant community to how much work and how little time we have," says Janine Brown, a reproductive physiologist for the Smithsonian's National Zoological Park.

Historically, says Brown, zoo biologists went to Asia or Africa to replace lost animals. But dwindling wild populations and new legal restrictions on endangered animals have led zookeepers to explore captive breeding as an alternative. The first known captive-born Asian elephant to survive infancy in North America was Packy, who was delivered in 1962 at the Oregon Zoo. The continent's first captive African birth came when a female named Little Diamond was born in 1978 at Knoxville Zoological Gardens. All told, only 129 Asian elephants and 38 African elephants have been born in North America since 1962. The infant mortality rate is above 30 percent. To make matters worse, a mystery disease killed at least 7 of the 34 Asian elephants born in North American zoos between 1983 and 1996. Among the dead was 16-month-old Kumari, who died in 1995 at the National Zoological Park in Washington, D.C. Through careful sleuthing, National Zoo pathologists Richard Montali and Laura Richman discovered that Kumari had died from a previously unknown form of the herpes virus. Richman, who now works for a private company, and Montali believe that one way Asian elephants pick up the disease is from contact in zoos with African elephants, which can carry the disease without ill effect. U.S. zookeepers have saved the lives of three sick animals by administering Famciclovir, an antiviral drug also used to fight herpes in humans.

Meanwhile, wild elephants have become even scarcer. In Africa, authorities estimate that the elephant population has dropped from 1.3 million in the 1970s to between 270,000 and 500,000 today. In Asia, elephant populations have dropped from an estimated 100,000 in 1900 to between 38,000 and 48,000 today. Among the threats to wild elephants are poachers, who kill the animals for their ivory tusks and meat; roads and railways that cross elephant migration routes; and farmland, which is replacing stamping grounds. In some places, farmers have killed elephants that have trampled crops and fences. "Elephants get killed every year," says Steve Osofsky, senior policy adviser for wildlife health at the New York-based Wildlife Conservation Society.

North American zookeepers hope to breed elephants not only to curb the need for further imports but also to develop new reproductive techniques that can be applied to wild herds. But captive breeding is fraught with physical obsta-

KARA PLATONI, a journalist based in Oakland, California, is profiled in this month's Editor's Note.

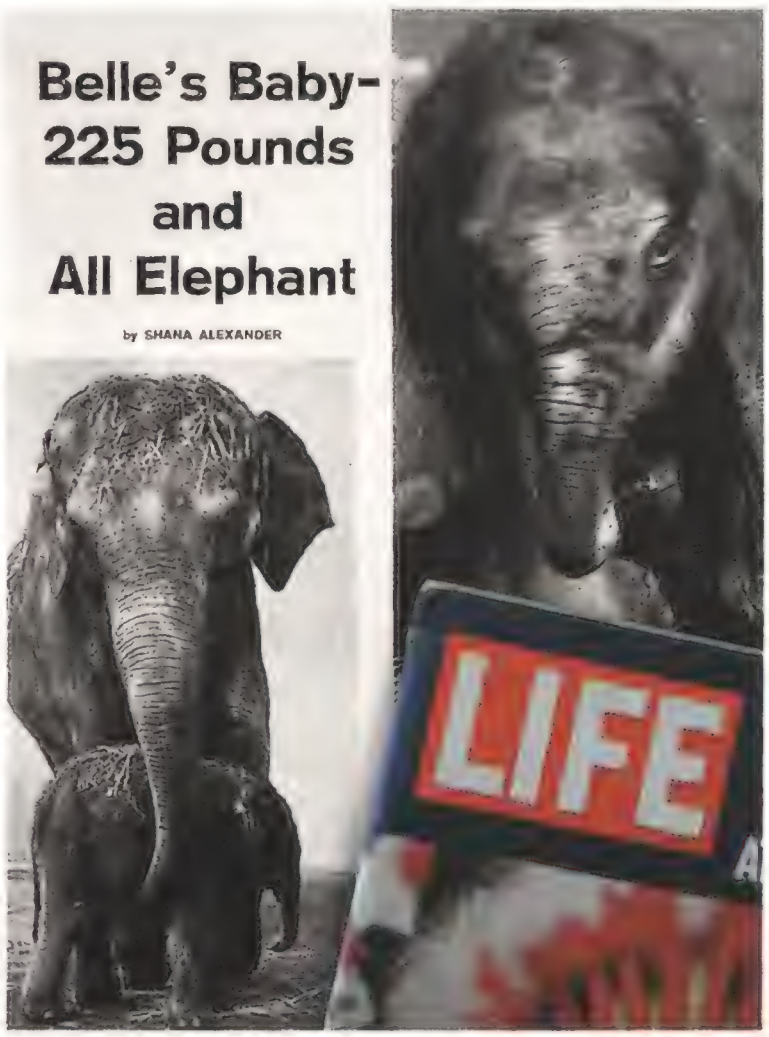
ERICA GALGAGNO / OAKLAND ZOO; P. 58-59 BRIAN SMALE (2)

"It's not the answer," says elephant artificial insemination expert Dennis Schmitt about the costly procedure, "but a tool."

cles and philosophical quandaries. Zoos cannot easily replicate life in the wild, where females generally live in matriarchal groups of 8 to 12 members that are usually related. In contrast, captive females often end up in small groups of unrelated individuals. Some groups contain Asian and African species. In addition, many zoos are unable to accommodate a full-grown bull, which can weigh up to 16,000 pounds and can be aggressive toward other elephants and zookeepers.

For years, some zoos have facilitated elephant courtship by loading a female onto a truck, driving her to a breeding bull and hoping for the best. The hope was usually forlorn. Infertility is a problem. Females older than 30 who are conceiving for the first time have a high incidence of stillbirths, and about 15 percent of captive Asian females and 25 percent of captive Africans of calf-bearing age are known as flatliners, meaning their reproductive hormone cycle is inactive.

Artificial insemination, which has worked well on many other species, is a challenge with captive elephants. Designing a means of navigating an elephant's eight-foot-long, curving reproductive tract and timing an elephant's estrus are among the obstacles. (An elephant's period of fertility—only two or three days out of every four-month estrus cycle—has been difficult to predict until recently.) In addition, facilities without a resident male must import bull sperm, which remains potent for only 24 to 48 hours. (Elephant sperm usually loses its viability when frozen, so establishing a sperm bank is not an option.) At the National Zoo, which doesn't have a bull, veterinarians must obtain samples from several bulls at different locations across North America and must time inseminations precisely. "It's like cooking a huge meal," says Brown, adding, "It takes a lot of planning to make sure that all the different courses come out at the right time and it's all hot when you go to serve it."



In 1962, *Life* magazine trumpeted the arrival of Packy, the first Asian elephant born in captivity in the United States to survive. Captive elephant births remain rare.

MARSHALL LOCKMAN / BLACK STAR

In October 1995, the National Zoo attempted its first artificial insemination on an Asian elephant named Shanthi, using new technology designed by Berlin's Institute for Zoo Biology and Wildlife Research. A long endoscope, which was equipped with fiber optics and contained a catheter that was guided by ultrasound, successfully delivered sperm. But Zoo scientists missed the elephant's estrus by four days. In reviewing Shanthi's case, however, Brown discovered a hormone that spikes three weeks before a female becomes fertile. This finding now allows researchers to pinpoint estrus with a simple blood test.

The first successful birth following artificial insemination took place in November 1999 at the Dickerson Park Zoo in Springfield, Missouri, when Moola, an Asian elephant, gave birth to a male named Haji. (He died from the herpes virus two and a half years later.) In 2001, Shanthi became the second artificially inseminated captive Asian elephant to deliver a calf. Despite the technical challenges and costs, ranging between $10,000 and $15,000 per event, artificial insemination offers the best way of increasing the birthrate in the short run, says Dennis Schmitt, an animal science professor at Southwest Missouri State University, who, along with Brown, is one of the nation's foremost experts on the procedure. "It's not the answer, but a tool," he says.

DOHANI'S DEATH, the way some experts see it, can be attributed to his mother's experience—or lack of it. Lisa came to the Oakland Zoo in 1976 when she was about 6 months old, after being captured in South Africa. She never had the chance to learn how to be a mother. In the wild, a female elephant grows up with her mother and aunts, watching as they give birth roughly every four to five years and observing how they care for their young. In fact, females in the wild assist one another during birth, and later engage in a form of collective baby-sitting called "allomothering," in which they protect, play with and sometimes even nurse the others' offspring. Wild elephants have even been observed crowding a reluctant mother, forcing her to be still so her calf can nurse, or disciplining mothers that are too rough with a baby.

"None of that background and learning happens when you take a young female who is maybe 6 months of age out of the wild," says Joel Parrott, the Oakland Zoo's executive di-

The National Zoo's Janine Brown (above left, flanked by scientists from Berlin's Institute for Zoo Biology and Wildlife Research) discovered a critical pattern in female elephants' hormonal cycle, a breakthrough that has vastly improved the artificial insemination success rate and resulted in the 2001 birth of Kandula (below, frolicking with mother Shanthi at the National Zoo at 8 months).

JESSIE COHEN / NZP (3)

"At this point, it's irresponsible for us to be breeding elephants in captivity," says the Elephant Sanctuary's Carol Buckley.

rector. Among captive elephants, reluctant mothers are not uncommon. Deborah Olson, director of conservation and science at the Indianapolis Zoo, recalls the case of an aggressive new mother that tried repeatedly to kill her newborn. "It took us three weeks to convince her that this baby was a wonderful thing," Olson says. Researchers don't know if such maternal aggression occurs in the wild.

At the Oakland Zoo, Lisa had been so aggressive toward her first live calf, Kijana, born in 1995, that zoo staff raised the baby by hand. In general, calves separated from their mothers at birth don't survive. Kijana proved no exception, dying at 11 months of herpes. So when Lisa became pregnant with Dohani, staff members attempted to prepare her for motherhood by creating an elephant baby doll, which they stuffed and placed near Lisa so she would get used to sharing her space with a smaller creature; they trained her to lift a foreleg on cue so a calf could reach her nipples. Even so, Kinzley recalls that it took Lisa several days to learn how to help Dohani stand, which Lisa did with a push of her foot and trunk.

Dohani's death also cuts to the core of a current debate among zookeepers about how best to work with elephants. The more traditional elephant management method, called free contact, comes from ancient Indian customs in which handlers share the same space and freely touch the animals using a hooked stick, or ankus, to direct them.

A new method, known as protected contact, favors rewards over force. Human contact is limited, and a physical barrier—such as fixed metal bars—remains between animal and handler. The Oakland Zoo first adopted the approach in 1991 after Dohani's father, Smokey, killed a handler. It was the nation's first zoo to practice protected contact with all of its elephants. (About half of U.S. zoos now use the method to manage some elephants.)

Dohani's death hasn't done much to reassure critics of protected contact. Could more active involvement have saved Lisa from killing Dohani? "My guess is that had we even been standing right there in the stall with her, whatever happened, happened so fast that we probably would not have even been able to stop it," says Kinzley. And Parrott points out that if the goal of captive breeding is to allow elephants a more normal life, there has to be a limit to human intervention. "At some point," he says, "nature has to be allowed to be nature."

The difficulties of captive breeding have led some to conclude that it is a waste of precious resources. Carol Buckley, cofounder of the Elephant Sanctuary in Hohenwald, Tennessee, says money and effort should be spent preserving wild elephant habitat rather than creating new babies behind bars. "At this point, it's irresponsible for us to be breeding elephants in captivity," she says. "It is impossible for zoos in an urban setting to provide a life for captive elephants that reflects their natural life."

The American Zoo and Aquarium Association, which accredits and sets standards for the facilities, banned the keeping of solitary elephants in 2001. Some zoo professionals hope that the ban will increase the captive elephant population, enabling more animals to stay in natal groups and perhaps breed more readily on their own. "I see subsequent generations of captive elephants as being good mothers, and our not having to play such a large role," says Olson.

Opponents of captive breeding programs argue that zoos in urban settings cannot provide elephants with environments that replicate life in the wild (above, Kenya's Nyiro River).

At the Oakland Zoo, staffers plan to acquire another bull elephant to breed with Lisa. Should she give birth again, says Parrott, the zoo will maintain a round-the-clock watch for a month after the delivery.

It will take the better part of a decade, says Wiese, for researchers to know if breeding programs are helping to stave off North America's elephant population crisis. In the meantime, there's debate over whether zoos should import more females to bolster the breeding ranks. But there is little time to argue. "We don't want to wait until there are ten elephants left in captivity and then investigate how to bring the population back," says Olson.

"The goal is not to get as many elephants in captivity as we possibly can," says Kinzley. "The goal is to use these as true ambassadors of the species, and have their lives be as full as they can be." One afternoon while watching Lisa play under a sprinkler at the Oakland Zoo, Kinzley recalled how happy Lisa seemed after Dohani was born. After a setback like Dohani's death, she said, zoo professionals should keep trying—for the elephants' sake. "I think it would be selfish on our part to give up." ○

BOBBY MODEL

Elizabeth REIGN ON!

Four centuries after her death, Good Queen Bess still draws crowds. A regal rash of exhibitions and books examines her life anew

BY DOUG STEWART

THOUGH MORE THAN 400 years have passed since they were painted, her portraits are as recognizable as a movie star's: the receding red hair studded with pearls, the lace ruff hugging the neck from ears to collarbone, the ghostly white face with its haughty, confident gaze. England's exalted Queen Elizabeth I insisted her face be depicted in this way, luminous and shadow-free. A former lady-in-waiting gossiped that the queen loved to be told no one could look her full in the face because her radiance rivaled the sun's.

"There was a lot of mystique around Elizabeth," says Georgianna Ziegler, head of reference at the Folger Shakespeare Library in Washington, D.C., which claims the largest collection of Elizabethan writings and artifacts outside Britain. Popular poetry of the day celebrated the queen as Diana, the chaste goddess of the moon. To her subjects, England's maiden queen seemed slightly unnatural, more divine than mortal. "She saw herself as wedded to her realm," Ziegler says. "In a sense, for almost half a century she *was* the realm." And she managed to exploit the very peculiarity of her status as an unmarried woman to help shape the most glorious era of English history.

This year marks the 400th anniversary of the Virgin Queen's death, and a string of new exhibitions has been organized to

"I know I have the body but of a weak and feeble woman, but I have the heart and stomach of a king," Elizabeth (right) told her troops as they awaited the Spanish Armada in 1588. Court painter George Gower's *Armada Portrait* celebrated England's victory over Spain.

commemorate her reign. The Folger has mounted a lavish tribute, "Elizabeth I, Then and Now," which opened in March—the month she died—and runs through August 2. At London's National Maritime Museum, a major exhibition is on view through September 14, and in Chicago, "Elizabeth I: Ruler and Legend" will open at the Newberry Library on September 30. "Elizabeth is a figure of great interest now," says Ziegler, "because she was a powerful woman who carved out her own place and made herself a queen at a time when there weren't models for doing that successfully."

In fact, Good Queen Bess is a full-fledged pop phenomenon. New romance novels and thrillers about Elizabeth or her archrival, Mary Queen of Scots, appear almost monthly. A recent book, *Oxford: Son of Queen Elizabeth I*, posits that the Earl of Oxford was not only the author of Shakespeare's plays but also Elizabeth's secret love child. Several new biographies are due out this year, and films and plays about her reign are being revived. "Her life was a classic survival story," says Sian Flynn, curator of the London exhibition. "She was nearly executed twice by her own siblings, and she succeeded as a woman in a man's world."

And what a cutthroat world it was. Elizabeth's father was King Henry VIII, rotund, red-haired and irascible. Her mother was Anne Boleyn, a coquettish young lady of the court who was pregnant with Elizabeth when Henry was still married to Catherine of Aragon. Henry, who was Roman Catholic, established the Church of England largely so he could have his marriage to Catherine annulled and marry Anne (a marriage the Catholic Church never recognized). Princess Elizabeth was born September 7, 1533. Within three years, Henry had her mother beheaded on a trumped-up charge of adultery. He married another fetching young lady of the court, Jane Seymour, 11 days later.

Small wonder that at age 6 Elizabeth was said to have the gravity of a 40-year-old. Dignified and studious, she was educated as befitted a Renaissance princess, versed in history, geography, astronomy, mathematics and music. Throughout her life, she translated Greek and Latin for recreation and, as queen, wrote poetry and composed prayers that were printed and sold for popular consumption. The Folger exhibition includes a bound edition of one of her earliest literary efforts, a long religious poem that she translated from the French. The work was a gift to her father's sixth wife, Catherine Parr, whom he married after sending wife number five, Catherine Howard, to the block for adultery. In the preface, Elizabeth explains that she worked at "joining the sentences together as well as the capacity of my simple wit and small learning could extend themselves." She was 11 at the time.

Elizabeth's father, Henry VIII (top), had his marriage to Catherine of Aragon annulled to wed Anne Boleyn (above), pregnant with Elizabeth.

Henry died three years later in 1547, and Elizabeth's younger half brother, Jane Seymour's son, was crowned Edward VI. Elizabeth was soon in danger. Barely two months after Henry's death, the widowed Catherine unwisely married Thomas Seymour, an ambitious uncle of the boy-king. When Catherine died in childbirth a year later, Seymour schemed to marry the 15-year-old Elizabeth (who had been living in his household), gain control over Edward and seize power for himself. He was arrested and beheaded for treason in 1549. Elizabeth was suspected of being in on the plot. Seymour had enjoyed hugging the young princess and liked to turn up in her bedroom in the early morning. She was even rumored to be carrying his child. But under interrogation Elizabeth denied misbehavior of any kind. "I do see it in her face that she is guilty," the crown's investigator fumed. "She hath a very good wit, and nothing is gotten of her but by great policy."

At 20, Elizabeth found herself in even greater peril. After Edward died in 1553 at age 15, most likely of tuberculosis, Mary Tudor, Elizabeth's staunchly Catholic half sister, ruled England with her fiancé, Philip of Spain. England had been convulsed by religious violence for decades, and under "Bloody Mary," as the queen was called, hundreds of English Protestants were burned at the stake for heresy. When a plot against the throne was uncovered in 1554, Mary was convinced that the Protestant Elizabeth—now next in line to be queen—was involved. Mary had her half sister arrested and sent to the

Movie and novel portrayals notwithstanding, DOUG STEWART *believes that Elizabeth I remained a virgin to her dying day.*

BURGHLEY HOUSE COLLECTION, LINCOLNSHIRE, UK / BRIDGEMAN ART LIBRARY; PRIVATE COLLECTION / BRIDGEMAN ART LIBRARY; P. 64 FOLGER SHAKESPEARE LIBRARY; P. 65 PRIVATE COLLECTION / BRIDGEMAN ART LIBRARY

"This is the doing of the Lord, and it is marvellous in our eyes," Elizabeth declared upon learning she was queen in November 1558. The day before her January 15, 1559, coronation, she rode jubilantly through the streets of London (above) in an open carriage.

Tower of London, the customary last stop before execution. Debarking in a wintry downpour at Traitor's Gate, Elizabeth called out, "Here landeth as true a subject, being prisoner, as ever landed at these stairs." She then dropped to the rain-soaked flagstones, saying, "It is better sitting here than in a worse place." The sodden princess refused to budge until one of her manservants broke down in tears. Disgusted by his show of weakness, Elizabeth collected herself and strode into the prison. Ultimately, Mary's fear of a Protestant rebellion probably spared Elizabeth, and she was released after two months.

Elizabeth succeeded her Catholic half sister, Mary Tudor (right at 28), and had cousin Mary Queen of Scots (left) beheaded for treason.

Four years later, in 1558, Elizabeth took to the throne with alacrity, slipping into the royal plural on learning that Mary Tudor was dead of cancer: "This is the doing of the Lord, and it is marvellous in our eyes," she declared on becoming queen, quoting Psalm 118. After Mary's unpopular reign, much of England was elated at Elizabeth's accession. She was now 25 years old, slender, with long golden-red hair and a suitably regal comportment. Accompanied by 1,000 mounted courtiers the day before her coronation, in January 1559, she rode smiling through the streets of London. She stopped the procession from time to time to accept bouquets, a purse of coins, a Bible, even a sprig of rosemary from an old woman. "I will be as good unto you as ever queen was to her people," she vowed to the delight of onlookers.

Says Clark Hulse, dean of the graduate college at the University of Illinois at Chicago and curator of the Newberry Library's exhibition, "Elizabeth's popularity had a lot to do with her manner—riding in an open carriage and all that. If her sister Mary was sober and inclined to burn people at the stake, Elizabeth projected the idea of 'Merry England.'" Many, however, were horrified at the prospect of a queen reigning without a king. In a manifesto published the previous year, "The First Blast of the Trumpet Against the Monstrous Regiment of Women," a fiery Calvinist named John Knox had pronounced female rulers "repugnant to nature," women being "weak, frail, impatient" and "inconstant."

FOLGER SHAKESPEARE LIBRARY; WALLACE COLLECTION, LONDON / BRIDGEMAN ART LIBRARY; NATIONAL PORTRAIT GALLERY, LONDON / BRIDGEMAN ART LIBRARY

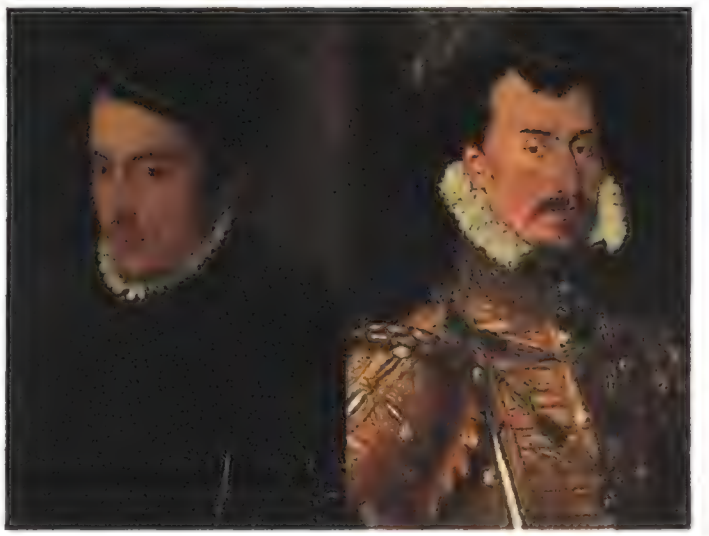
From the start, Parliament pressured the new queen to marry, but she was defiant. "A strange thing that the foot should direct the head in so weighty a cause," she upbraided Parliament in 1566. What to the M.P.s was a matter of state—England needed a king and princes who would grow to be kings—was to Elizabeth a near-treasonous affront.

The Folger's Ziegler says that Elizabeth's marriage would surely have led to turmoil, even if Parliament and her Privy Council failed to realize it. "She was very astute politically," Ziegler explains. "If she married a Catholic or a foreigner, that would upset a lot of people. If she married an English nobleman, it would create factions among the other nobles."

Nevertheless, the royal families of Scotland, France, Spain, Sweden and the Holy Roman Empire eyed England covetously, and various male royals courted her from afar, using ambassadors as go-betweens. "Elizabeth played along with one foreign prince or another, but it was mostly a political ploy," says Ziegler. Soon after she became queen, Elizabeth kept Spain's enmity in check by letting her late sister's husband, Philip II, now king of Spain, imagine he might marry her next. Later she kept France a wary ally against Spanish hegemony by pursuing a courtship with the French king's brother, the Duke of Alençon, complete with mutual love letters. "There is no prince in the world to whom I would more willingly yield to be his," the 45-year-old queen wrote him in 1579.

That year, the 25-year-old duke had called on Elizabeth in person, the only foreign suitor to do so. (The queen never set foot outside England.) The pair played at being courtly lovers, and Elizabeth was evidently quite fond of the gallant young man, whom she affectionately called "our frog." Ultimately, says Carole Levin, a professor of history at the University of Nebraska, "I don't think she ever wanted to marry. But I think she loved courtship and flirtation. I think she *adored* it." She is vain, wrote the Spanish ambassador in 1565, "and would like all the world to be running after her." As for men at the English court, a number of them, both married and unmarried, vied for Elizabeth's attentions with flattery and gifts. It was how one did business with the queen. Thus, wrote British historian J. E. Neale in his classic 1934 biography, *Queen Elizabeth*, "The reign was turned into an idyll, a fine but artificial comedy of young men—and old men—in love."

If Elizabeth herself ever fell passionately, foolishly in love, it was with Robert Dudley, her "sweet Robin." He was handsome and headstrong, an accomplished horseman and jouster, popular with the ladies at court and unpopular with the men. He and the queen flirted openly; the gossipy Spanish ambassador reported rumors in 1559 "that her Majesty visits him in his chamber day and night." It apparently bothered neither of them that Dudley was already married. He might well have sued for divorce in hopes of marrying the queen had his wife not been found in 1560 at the bottom of a staircase, dead of a broken neck. Though her death was more likely a suicide or an accident than a homicide, the ensuing scandal doomed Dudley's chances of ever becoming king. He remained the object of Elizabeth's affection all the same. When he knelt before her to be made Earl of Leicester (pronounced "Lester") four years later, the then 31-year-old queen couldn't resist tickling his neck. "I think she had an emotional and romantic relationship with Leicester," says Carole Levin. "I think there was some intimacy, but I don't think it ever went all the way."



Elizabeth (top, at age 46 in George Gower's 1579 "Sieve" portrait—a sieve was a symbol of virginity) was courted by France's Duke of Alençon (above, left) and her great favorite, the Earl of Leicester.

Quick-witted, tough-minded and imperious, Elizabeth wrote her own speeches to Parliament and was England's chief diplomat—she spoke six languages in an age when none of the ambassadors to London spoke English. She once dressed down a Polish ambassador whom she found impertinent with a long, fluent harangue—in Latin. Her godson, Sir John Harington, wrote that she "left no doubtings whose daughter she was."

Like her father, Elizabeth was vain, manipulative and a bit coarse. She spat, swore, gambled at cards and backgammon, and picked her teeth in public. She silenced those who tried her patience, even priests in mid-sermon, with oaths like "Jesus!" and "God's death!" With questionable humor, given her mother's fate, she joked just before naval hero Francis Drake was knighted that she had "a gilded sword to strike off his head." And she was a practiced liar as well as a wit. Sometimes she lied apparently for her

FOLGER SHAKESPEARE LIBRARY; HERMITAGE, ST PETERSBURG, RUSSIA / BRIDGEMAN ART LIBRARY; WALLACE COLLECTION, LONDON / BRIDGEMAN ART LIBRARY

own amusement. In 1559, with Catholic Europe outraged at her steadfast Protestantism, Elizabeth toyed with the Spanish ambassador by telling him she wanted nothing more than "to be a nun and to pass her time in a cell praying." The Spaniard was amazed by her gall, concluding, "This woman is possessed by a hundred thousand devils."

On occasion—weighing a marriage offer, say, or a traitor's sentence—Elizabeth could be maddeningly indecisive. But in large matters, notably foreign policy and religious affairs, her shrewd, deliberate style was what England needed. With rare exceptions, she refused to commit troops to Protestant insurrections on the Continent, sending the rebels modest cash payments instead. (Elizabeth was notoriously frugal in approving outlays from the royal purse.) At home, she preferred to threaten high-ranking miscreants with exposure rather than execution. Her natural caution, coupled with luck and political savvy, gave England nearly half a century of unaccustomed peace.

"Her refusal to cater to the extremes of politics or religion, at a time when civil wars were raging through the rest of Europe, was a triumph of the via media, the middle way," says the National Maritime Museum's Sian Flynn. "Somehow Elizabeth personified many things—stability and lack of extremism, for example—that are now considered to be quintessentially English."

Thanks to the relative tranquillity of English life during her reign, the arts flourished. Two treasures in the Folger's exhibition are first-edition quartos of Shakespeare's *Love's Labour's Lost* and *The Merry Wives of Windsor.* "When Shakespeare's plays were first printed during his lifetime, they appeared as these cheap little paperbacks," Ziegler says. The title page of *Love's Labour's* notes that the text is "as it was presented before her Highnes this last Christmas."

At the other extreme in the Folger's collection is an enormous English-language Bible that the archbishop of Canterbury presented to Queen Elizabeth in 1568. The tome is bound in red velvet with ornate gilt clasps embossed with Tudor roses. Oddly, the text is accompanied by hand-colored woodcuts of Elizabeth's court favorites, including Leicester. Vernacular Bibles were a potent symbol of English Protestantism in Elizabeth's day—under her Catholic sister, Mary, prayers and scripture in any language but Latin were deemed a sacrilege. Playing to the crowd during her coronation parade, Elizabeth had hugged an English Bible to her chest.

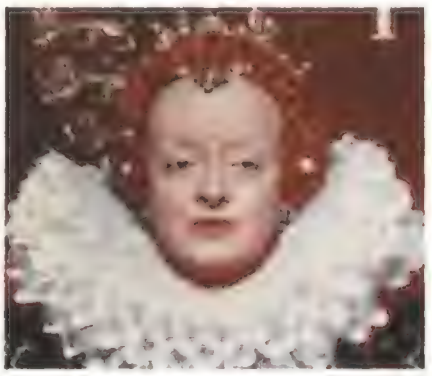
To show herself to the populace beyond London, Elizabeth undertook frequent "progresses" from one estate to another. A court on the move was like an occupying army, involving as many as 400 luggage-filled carts. "There were so many people," says Ziegler, "that they couldn't stay in one place for more than a couple of weeks because the privies became a health hazard." Learning she would pass through Sandwich in 1573, the town fathers ordered that the streets be paved, that all hogs be penned and that brewers "brew good beer." At an open-air banquet the evening of her visit, the queen endeared herself to her hosts by giving her food-

Pretenders to the Throne

On stage and silver screen, a galaxy of stars—from Sarah Bernhardt to Quentin Crisp to Whoopi Goldberg—have donned the Virgin Queen's shimmering robes.

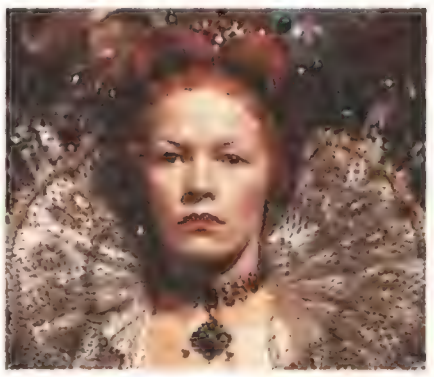
SARAH BERNHARDT, 1912

LYNN FONTANNE, 1930

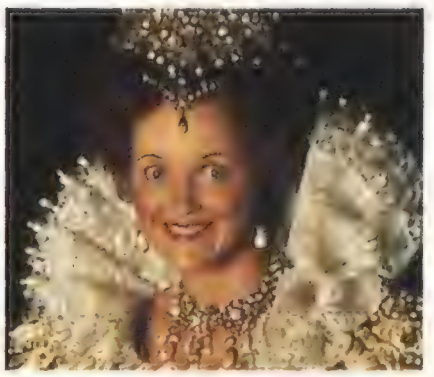


BETTE DAVIS, 1955

JUDITH ANDERSON, 1968



GLENDA JACKSON, 1971



MIRANDA RICHARDSON, 1986

QUENTIN CRISP, 1992

CATE BLANCHETT, 1998

JUDI DENCH, 1998

WHOOPI GOLDBERG, 1999

CLOCKWISE FROM TOP RIGHT: PHOTOFEST (3); EVERETT COLLECTION; LA DAILY NEWS / DAVID CRANE / CORBIS SYGMA; EVERETT COLLECTIONS (5)

tasters the night off. "She was a master of publicity," says Flynn. "She courted popularity the way Princess Diana did."

On formal occasions when dignitaries gave long-winded orations praising her virtues, Elizabeth would bite her lip and shake her head with mock humility. But once, when a speaker cited her virginity, the queen called out proudly, "God's blessing of thine heart, there continue!"

She made her chastity—real or not—a political asset, a badge of independence and incorruptibility. Then too, Elizabeth may have preferred being single. In an audience with the queen in 1564, the Scottish ambassador boldly suggested as much: "Ye think that if ye were married, ye would be but queen of England, and now ye are king and queen both. Ye may not suffer a commander." By the 1570s, says Clark Hulse, "Elizabeth had made being unmarried one of her strengths. The very people who had pushed her to get married in the 1560s were now pushing her not to marry. The nation didn't want a male who even thought he could order Elizabeth around—not that anyone could have."

"I warned him . . . he should not touch my scepter," Elizabeth said of Robert Devereux, 2d Earl of Essex, after she had him executed for treason in 1601.

Elizabeth played the role of Virgin Queen with theatricality and pomp, and England was dazzled. "As she grew older and the chances of her marrying became unrealistic," says Flynn, "she turned herself into 'Gloriana,' which is the Elizabeth that most people know, with the white-powdered face. She became the personification of state." In surveyor Christopher Saxton's grand atlas of Britain, published in 1579, an engraving of Elizabeth enthroned fills the title page. Elizabeth *was* England.

As she aged, her clothing grew more elaborate, and she took to concealing her thinning hair with red wigs topped with constructions shaped like leaves, globes or pyramids. Her clothes were an exhibition of power, says Cynthia Abel, costume director of the Shakespeare Theatre in Washington, D.C. "She dressed to look strong and be impressive."

By the time she entered her 50s, her face was gaunt and pockmarked (from a near-fatal case of smallpox at age 29), her joints stiff, her teeth rotting. Coveting her throne was a younger, more hot-blooded woman: Mary Queen of Scots. A Catholic educated at the French court and a grandniece of Henry VIII, Mary Stuart was a vivacious but arrogant woman with a knack for attracting unsavory men and no knack whatsoever for governing.

"Mary is usually portrayed as sexier-looking than Elizabeth," says Ziegler. "She had quite a cult following." Her followers, however, were mostly in France. At 25, she'd been toppled from the Scottish throne by a rebellion after she married the unpopular Earl of Bothwell in 1567. The earl was widely suspected of murdering her previous husband, Lord Darnley, an ambitious schemer and drunkard whom Mary had named king of Scotland. After her ouster, she fled south to England, where Elizabeth kept her under house arrest for the next 19 years. Mary passed her time doing embroidery and sending coded messages to one plotter or another. In 1586, England's spymaster, Sir Francis Walsingham, intercepted and decoded letters smuggled out in beer kegs in

A savvy politician, Elizabeth managed her public image vigilantly, traveling campaign-style with her court nearly every year to visit her subjects. Below, her plumed coach arrives in the Surrey countryside (c. 1582) at Nonsuch Palace, built by her father, Henry VIII.

NATIONAL GALLERY OF ART, WASHINGTON DC; FOLGER SHAKESPEARE LIBRARY

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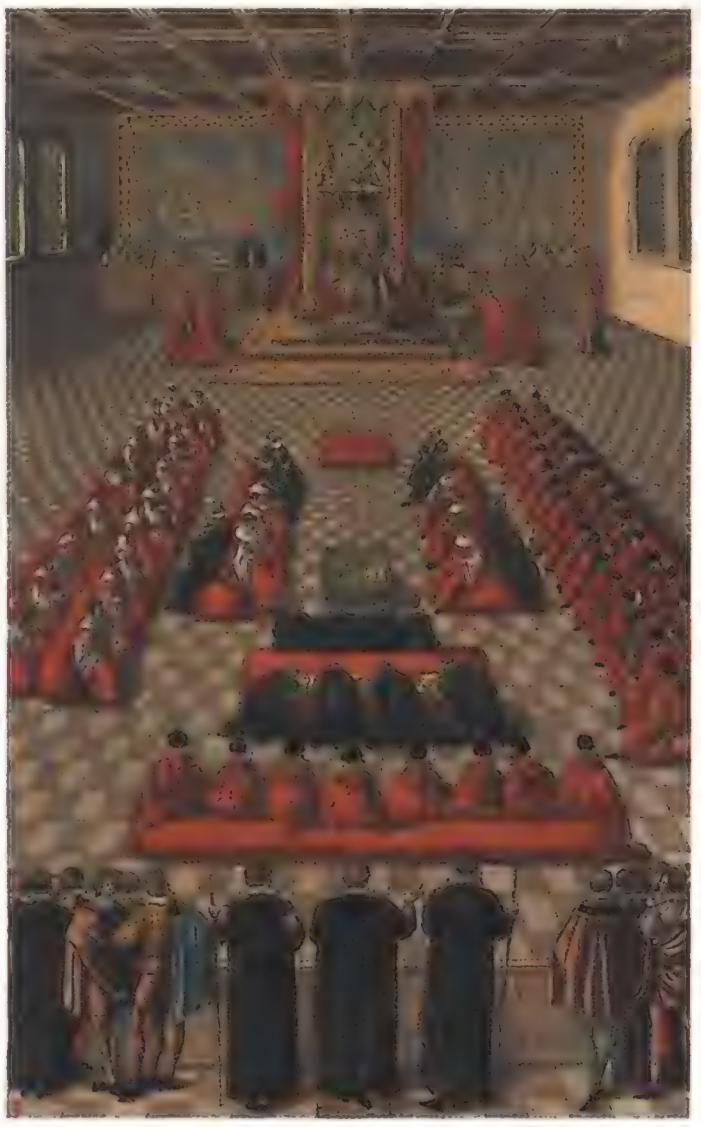
which Mary discussed plans for Elizabeth's murder and Mary's own rescue by a Spanish invasion. It was one plot too many. Elizabeth dithered for a year before reluctantly approving her cousin's execution. (For more than a century, playwrights and filmmakers have staged dramatic confrontations between the two willful queens; in fact, the women never met.) After Mary was beheaded in 1587, the Continent mourned her as a martyr to her religion.

For her part, Elizabeth was threatened by a more intimate menace. Robert Devereux, the dashing and reckless Earl of Essex, moved into her good graces on the sudden death of his stepfather, the Earl of Leicester, in 1588. Essex was 33 years younger than Elizabeth and likely never aroused her ardor the way his stepfather had. He was neither adept as a military commander nor comfortable in taking orders, least of all from a woman. Openly insubordinate to the queen after bungling a military campaign in Ireland, he was banished from court in 1599. The Folger show includes a copy of a letter from him entitled, not very apologetically, "An Apologie of the Earle of Essex, against those which jealously, and malisiously tax him to be the hinderer of the peace and quiet of his country." The author signed another appeal (possibly to Elizabeth): "a hart torne in peeces with care, greife, & travaile." The Apologie didn't work, and in February 1601, Essex and a band of followers tried to stir a popular rebellion against the queen's councillors, and perhaps the queen herself. He was arrested, tried for treason and beheaded. Elizabeth's chilly postmortem: "I warned him that he should not touch my scepter."



"To be a king and wear a crown," Elizabeth (on throne, meeting with Parliament) told members of the august body in 1601, is "more glorious to them that see it than it is pleasant to them that bear it."

By this time she had wielded it for 43 years. In November 1601, in her emotional "Golden Speech" to members of Parliament, the queen, now 68, reflected on her long reign. "Though you have had and may have many princes more mighty and wise sitting in this seat," she declared, "yet you never had or shall have any that will be more careful and loving." She owed her success, she said, to the loyalty and affection of the English people. "Though God hath raised me high, yet this I count the glory of my crown—that I have reigned with your loves."

Elizabeth was no doubt sincere, but she was too smart to depend for her power purely on her subjects' affection. "Machiavelli said it's better to be feared than loved," says Clark Hulse. "Elizabeth knew it was better to be both. She used force only as a last resort, but it was always on the table. Plenty of people were hanged during her reign."

The end came a little more than a year after the Golden Speech. According to one account, "her appetite to meate grew sensibly worse & worse; whereupon shee became exceeding sad, & seemed to be much grieved at some thing or other." Enfeebled by rheumatism and possibly pneumonia, the queen died March 24, 1603. She was 69.

A flood of books and poems mourned her passing. A century later, the date Elizabeth first gained the throne, November 17, was still celebrated with bonfires, and children were taught verses about a queen they never knew: "Gone is Elizabeth, / whom we have lov'd so deare, / She our kind Mistris was, / full foure and forty year." In a time when most of England no longer worshiped the Virgin Mary, the Virgin Queen was a Protestant substitute they could adore instead.

Eventually, Elizabeth's own carefully tended image was supplanted by a more romantic one: that of the pining virgin fated to rule alone. Popular tales like *The History of Queen Elizabeth and Her Great Favorite, the Earl of Essex, in Two Parts—a Romance* began appearing anonymously by the late 17th century. By the 20th, the pantomimes of courtly love in which Elizabeth and her courtiers had indulged had become dramas of passion and betrayal in which Leicester, Essex and Mary Queen of Scots were stock characters. For many today, the Earl of Essex is inseparable from Hollywood's swashbuckling Errol Flynn, who brought Bette Davis to grief in the 1939 hit *The Private Lives of Elizabeth and Essex.*

In historical terms, Queen Elizabeth I was an unsurpassed model of a learned, intelligent woman. She proved that a queen could rule and rule triumphantly. Sarah Jinner, author of a 1658 "almanack," asked, "When, or what Commonwealth was ever better governed than this by the virtuous Q. Elizabeth? I fear I shall never see the like again, most of your Princes now a dayes are like Dunces in comparison of her." In a paean from the 1640s, American poet Ann Bradstreet used the memory of "That High and Mighty Princess Queen Elizabeth" to aim a zinger at 17th-century male chauvinists:

Let such as say our sex is void of reason,
Know 'tis a slander now, but once was treason. ○

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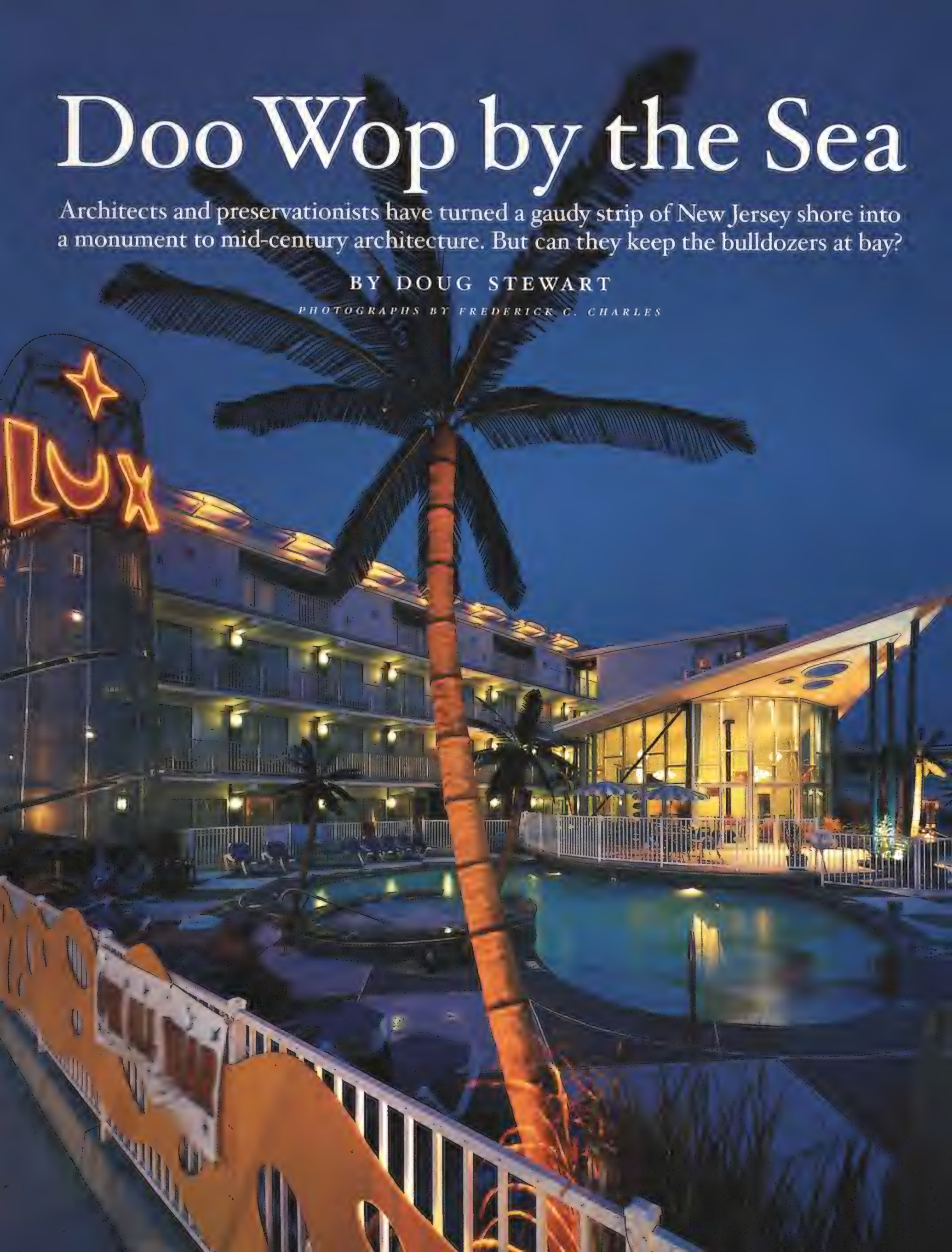
Doo Wop by the Sea

Architects and preservationists have turned a gaudy strip of New Jersey shore into a monument to mid-century architecture. But can they keep the bulldozers at bay?

BY DOUG STEWART

PHOTOGRAPHS BY FREDERICK C. CHARLES



"WE CALL THIS the Pupu Platter style of architecture," says Joan Husband, pointing to the Waikiki motel on Ocean Avenue in Wildwood Crest, New Jersey. As our sight-seeing trolley rolls along on a steamy summer evening, local preservationist Husband, 56, keeps up a running patter at the microphone: "It has the thatched roof over the canopy, the Diamond Head mural on the side and lava rocks built into the walls." We swivel in our seats for a better view. The motel-packed strip before us suggests an exotic, if confused, paradise far, far from New Jersey: we pass the jutting Polynesian roofline of the Tahiti; the angled glass walls and levitating ramp of the Caribbean; and the neon sputnik and stars, sparkling in the twilight, of

"This is the energy of American culture at its most useful and exuberant," says Philadelphia architectural historian George Thomas, 58, of motels like the Caribbean (below), whose vintage style is echoed in the 2001 renovation of the Starlux (left).

"Doo Wop isn't something you can define exactly," says Duane Sloan, the former mayor of Wildwood. "It's more of a feeling."

the Satellite motel. Oddly perfect palm trees fringe motel swimming pools; Husband helpfully identifies the species—*Palmus plasticus wildwoodii*. "It grows right out of concrete."

The people who built the nearly 300 motels along this five-mile section of the Jersey Shore in the 1950s and '60s could not have foreseen that their properties would one day warrant architectural tours, however tongue-in-cheek the spiel. The garish establishments crowd three shore towns known as the Wildwoods (North Wildwood, Wildwood proper and Wildwood Crest), occupying a stretch of barrier beach south of Atlantic City and just north of the restored Victorian resort town, Cape May. Most of the buildings sprang up when the Wildwoods were in their glory days as a beach resort. With so much competition, the motels here had to scream for attention—it was survival of the loudest.

Today, the buildings constitute an unplanned time capsule of mid-century American resort architecture, worthy, say architects and historians, of study and preservation. The towns' gaudy motel districts, in fact, are considered a shoo-in for inclusion on the National Register of Historic Places in the next year or two. To Philadelphia architectural historian George Thomas, 58, the Wildwoods' motels are "a collision between the techy modern and tacky Art Deco. This isn't the awful high architecture that has bored us to tears and given us places that no one wants to be," he says. "This is the energy of American culture at its most useful and exuberant." Unfortunately, the brash spirit of the Wildwoods' venerable mom-and-pop motels is now threatened by the onrush of 21st-century development. With the value of ocean-view land soaring, vintage motels are starting to disappear as their owners sell to condo builders. "An awful lot of demolitions have taken place recently," says local businessman Jack Morey, 42. "If the big guys eat the little guys, then the Wildwoods lose their character and might as well be anyplace."

Well, not *anyplace*. In the summer, people queue up for monster-truck rides on the beach, and the switchboard operator at city hall works in bare feet and a T-shirt. The communities' true Main Street is a broad wooden boardwalk—about two miles of amusement piers, high-decibel music and fried-dough stands. In July and August, it's jammed with sunburned people, many wearing tattoos and talking loudly. The eye-catching motels, with their beckoning neon signs, are a stylistic extension of the boardwalk. There are cantilevered roofs and thrusting pylons, and colors like aqua and shocking pink. "Whoever has the concession for turquoise motel curtains in the Wildwoods is really making money," says Husband, a retired nurse who worked in a boardwalk gift shop as a teenager. Unlike drab way-station motels on the outskirts of cities, these places were built to be destinations worth spending a vacation in.

In 1956, J. B. Jackson, editor of *Landscape* magazine, defended this style of over-the-top design, then under attack by city-beautification types. In "all those flamboyant entrances and deliberately bizarre decorative effects, those cheerfully self-assertive masses of color and light and movement that clash so roughly with the old and traditional," Jackson wrote, he discerned not a roadside blight "but a kind of folk art in mid-20th-century garb."

Today, this folk art is more apt to charm than shock. Cruising down Ocean Avenue at night, I'm struck by how oddly harmonious the motels are. The multicolored neon signs pass by like so many colored gems, uninterrupted by the blinding white fluorescent tubing typical of gas stations and chain stores in 2003. "When it's all lit up at night," says waiter Chris Sce, 19, as he clears dishes at the Admiral's Quarters Restaurant, "you feel like you're on vacation, even if you're working." At the Hi-Lili Motel a few blocks away,

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DOUG STEWART last wrote about Stieglitz for the June 2002 SMITHSONIAN. FREDERICK CHARLES photographed the Massachusetts Museum of Contemporary Art in the March 2000 issue.

BOTTOM: TIMOTHY BELL

"It's like time stood still," says Carmelo Melilli, who's been vacationing here for decades. "Everything's like it was 30 years ago."

Carmelo and Beverly Melilli, both 54, say they've been coming to the Wildwoods for 30 years. They love the lights, the colors. "It's like time stood still," Carmelo says. "Everything's like it was 30 years ago. It's perfect."

That pleasant time-warp feeling comes in part from the motels' names, which summon up popular American fixations of the '50s and '60s. The Hi-Lili, for example, is named after the hit song "Hi-Lili, Hi-Lo" from the 1953 film *Lili*. Others evoke classic movies (the Brigadoon, the Camelot, the Showboat) and popular cars (the Thunderbird, the Bel Air). Hawaii's 1959 statehood inspired the motel builders who put up the Ala Moana, the Aloha and the Ala Kai.

Local historian Bob Bright, Sr., remembers the Wildwoods in the days before neon. Still enthusiastic at 93, Bright holds court at a little historical museum on Pacific Avenue in Wildwood. When he was a boy, he says, the towns accommodated its visitors in large hotels and rooming houses. "They were made of wood from our own trees," he says. "Wildwood was named because the whole town was nothing but trees!" He hands me a photo album of rambling three- and four-story Victorian hotels. "Those old buildings were beautiful with their spires and towers, just like Cape May."

Postwar affluence and mobility brought change to the Wildwoods, as it did everywhere. In summer, working-class Philadelphians and New Jerseyites with growing incomes hopped into their cars and cruised down the brand-new Garden State Parkway to the Jersey Shore. In the Wildwoods, days at the beach and on the boardwalk were followed by nights at the music clubs that crowded downtown Wildwood, known in the '50s as Little Las Vegas. Motels offered vacationers advantages that hotels couldn't match: you could park the new family car right outside your room and you didn't have to shush the kids.

In the Wildwoods, the beach's steady eastward migration—ocean currents have helped add an average of about 15 feet of sand per year—aided the motel boom. Surf Avenue, for example, which is now three blocks from the ocean, was indeed surf early in the 20th century. By the '50s, the old wooden buildings were landlocked, and the motel developers

"If the big guys eat the little guys," says Jack Morey, owner of the Starlux (interior, below), "then the Wildwoods lose their character and might as well be anyplace."

BOTTOM: TIMOTHY BELL

could build on virgin oceanfront property. This accounts for the pleasing architectural rhythm of the Wildwoods' low-rise motel districts, great swaths of which are uninterrupted by out-of-scale anachronisms.

Many builders looked south for style. "My dad, Will Morey, built several of the early motels here, like the Fantasy and the Satellite," says Morey, whose family operates four Wildwood amusement piers. "He'd take ideas from Florida and other places and 'Wildwoodize' them, that's the term he used." If angled windows and wall cutouts looked classy on a Miami Beach hotel, he'd scale them down and try them on a Wildwoods motel. Beneath their surface pizzazz, of course, the motels were cinder block Ls and Is overlooking asphalt parking lots. Just as Detroit used tail fins to make overweight cars look fast, builders like Will Morey used angles and asymmetry to make motels look stylish and, above all, *modern*.

By the '70s and '80s, however, the motels began to show their age. They continued to draw customers, but there were fewer families and more boisterous young singles. "Bars were open until 5 a.m.," says neon sign maker Fedele Musso, 51, who in the '70s owned an arcade and a food stand on the boardwalk. "All these beer joints were selling seven beers for a dollar, which didn't help much." Seedy eyesores marred the motel strip. But because the local economy was in the doldrums, there was little incentive to knock down motels and put up something bigger.

"Those old buildings were beautiful," says local historian Bob Bright (right, with son Bob Bright, Jr., and pal, Buddy) of Wildwoods' earlier, Victorian architecture.

Moreover, the Wildwoods, unlike warm-weather resorts Miami and Las Vegas, suffer a short tourist season, which limits profits and, in turn, the improvements motel owners can afford. "In the off-season, the parking meters are removed and the traffic signals change to flashing yellow," says Philadelphia architect Richard Stokes. "They even take the fronds off the palm trees." For preservationists, the short season is a blessing: it has deterred hotel chains from swooping in and putting up high-rises.

The Wildwoods' discovery as an improbable design mecca began in 1997. That year, the late Steven Izenour, a champion of vernacular architecture who was part of the Philadelphia architectural firm Venturi, Scott Brown and Associates, helped lead design workshops he called "Learning from the Wildwoods" with architectural students from the University of Pennsylvania, Yale and Kent State. "It can be a counter-Disney," Izenour told a *New York Times* reporter in 1998, referring to the Wildwoods' cluster of motel kitsch. "The more you have Disney, the more you need Wildwood."

That same year, a handful of local motel-ophiles banded together to form the Doo Wop Preservation League, aimed at boosting appreciation for the resort's architectural heritage. The name Doo Wop, known as Googie or Populuxe in Los Angeles, South Florida and other pockets of flamboyant mid-century architecture, alludes to the Wildwoods' heyday as an early rock 'n' roll venue. (It was Wildwood's own Starlight Ballroom that hosted the first nationwide broadcast of "American Bandstand" in 1957.) Doo Wop Preservation League volunteers lead the trolley tours, and charter member Musso oversees the group's funky warehouse-*cum*-museum.

They are also in the rescue business. The greatest save to date is the Surfside Restaurant, a circular, steel-structured 1963 landmark in Wildwood Crest. This past October the restaurant's owner wanted to tear it down to expand the hotel he also owned next door. Within two weeks, preservation league volunteers, led by the group's cofounder, Jack Morey, raised the $20,000 needed to unbolt the structure and store it. Plans call for the Surfside to be reborn as the Crest's new beachfront visitors' center.

In spite of the league's efforts, in the past two years more than two dozen old motels in the three towns have come down. Among the fallen are the Frontier Motel, with its wagon-wheel light fixtures and framed plastic six-guns, and the renovated Memory Motel, which, despite a new water slide and rock 'n' roll murals, was flattened in 2001 to make way for a six-story condo. "If you have an old 18-unit motel you think is worth $600,000 and someone offers you

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SAVANA

Preservationists see the Wildwoods' short tourist season as a blessing that helps deter big hotel chains from building high-rises.

a million for it, you're going to say, 'Good-bye! Here's the key,' " says Mike Preston, the Wildwoods' construction official and the zoning officer for Wildwood Crest.

"The Wildwoods are probably the last and the cheapest resort spaces available on the Jersey Shore," says Wildwood planning-board member Pete Holcombe, 57. If a new building boom starts here, even National Register status won't stop the demolition. "Although we can't prevent people from tearing down Doo Wop buildings," says Holcombe, "we *can* convince them they have a valuable asset."

Indeed, a number of old motels—such as the Pink Champagne—are undergoing face-lifts. "We restored the neon sign using the original blueprint," says owner Andrew Calamaro, 60. "The locals use it as a landmark." Calamaro takes his responsibilities to heart. When he replaced the wooden champagne glasses on guest room doors with newer versions (he wanted the champagne sloshing rakishly to one side), he saved the originals. "For me, it's just a gut reaction to keep the old," he says. Calamaro is obviously in sync with his guests; many are customers who ask for the same room year after year. Referring to a group that just checked out, he says, "This was their 33rd year."

But the motels can't depend solely on their old customers. "One of the problems with the Wildwoods is that the parents of the families who have been coming back to the same motel for years will be dying off," says architect Richard Stokes, "and their kids are going to places like Florida instead." Stokes advises owners to lure a new, younger generation of guests not only by dusting off authentic '50s features, but adding shiny new ones such as lounges and flat-screen TVs. Preservation league member Elan Zingman-Leith, 51, who's done preservation work in Miami's resurrected South Beach, agrees that the Wildwoods needs to turn up the volume. "If Wildwood is going to succeed, it has to be a keyed-up, brighter-than-it-really-was-in-1960 version."

Helping push it that way, the Penn/Yale/Kent State students brainstormed ideas aimed at revitalizing the Wildwoods by pulling in younger tourists who don't remember the '50s while holding on to the regulars. Their 1999 report called for embellishments such as bigger, louder signs and more of them. George Thomas, who taught some of their workshops, says approvingly, "It's historic preservation but on steroids."

A notable effort to balance new cool and old cool is the Starlux, a debonair addition to Wildwood's Rio Grande Avenue. The Starlux was a nondescript late-'50s motel until 1999 when amusement-pier mogul Jack Morey bought the building and, for $3.5 million, made it a Doo Wop revival demonstration project. "The Starlux was conceived as a year-round motel," says Stokes, who designed it. He expanded the motel and spruced it up with sling chairs and lava lamps. But he also added a new pool, conference facilities and a dramatic Astro Lounge. He got the idea for the lounge's jaunty flying-V roof from an old Phillips 66 station. The overall effect is playful. "We didn't want the Starlux to look like an authentic '50s motel," Stokes says. "What we wanted was a 21st-century interpretation of the '50s."

Other businesses have begun climbing aboard the Doo Wop bandwagon. In an ice-cream parlor called Cool Scoops, you can sip a malted while sitting in the rear half of a 1957 Ford Fairlane. A new Harley-Davidson motorcycle dealership resembles a '50s movie theater, marquee and all. Sporting a more refined retro look is the Maureen Restaurant and Martini Bar, an upscale place with a 27-foot neon martini-glass sign. Even the area's fast-food chains are ditching their generic signs. Says former Wildwood mayor Duane Sloan: "We tell them, 'Look, we want angles, glass, neon. We want it to look unlike what you would see anywhere else.' " Sloan, 37, believes the Wildwoods' unique style will survive. "Doo Wop isn't something you can define exactly," he says. "It's more of a feeling. Really, what we want to be is cool." ○

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Research suggests the so-called
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But why, if they were so smart, did they disappear?

BY JOE ALPER

PHOTOGRAPHS BY ERIC SANDER
ILLUSTRATIONS BY STAN FELLOWS

RETHINKING NEANDERTHALS

BRUNO MAUREILLE UNLOCKS THE GATE in a chain-link fence, and we walk into the fossil bed past a pile of limestone rubble, the detritus of an earlier dig. We're 280 miles southwest of Paris, in rolling farm country dotted with long-haired cattle and etched by meandering streams. Maureille, an anthropologist at the University of Bordeaux, oversees the excavation of this storied site called Les Pradelles, where for three decades researchers have been uncovering, fleck by fleck, the remains of humanity's most notorious relatives, the Neanderthals.

We clamber 15 feet down a steep embankment into a swimming pool-size pit. Two hollows in the surrounding limestone indicate where shelters once stood. I'm just marveling at the idea that Neanderthals lived here about 50,000 years ago when Maureille, inspecting a long ledge that a student has been painstakingly chipping away, interrupts my reverie and calls me over. He points to a whitish object resembling a snapped pencil that's embedded in the ledge. "Butchered reindeer bone," he says. "And here's a tool, probably used to cut meat from one of these bones." The tool, or lithic, is shaped like a hand-size D.

"Neanderthals were not so stupid," says Maureille (with Neanderthal skull castings at Les Pradelles in France). The site's many fossilized reindeer parts (a tooth fragment, inset, above) hint at organized hunting and butchering.

All around the pit, I now see, are other lithics and fossilized bones. The place, Maureille says, was probably a butchery where Neanderthals in small numbers processed the results of what appear to have been very successful hunts. That finding alone is significant, because for a long time paleoanthropologists have viewed Neanderthals as too dull and too clumsy to use efficient tools, never mind organize a hunt and divvy up the game. Fact is, this site, along with others across Europe and in Asia, is helping overturn the familiar conception of Neanderthals as dumb brutes. Recent studies suggest they were imaginative enough to carve artful objects and perhaps clever enough to invent a language.

Neanderthals, traditionally designated *Homo sapiens neanderthalensis*, were not only "human" but also, it turns out, more "modern" than scientists previously allowed. "In the minds of the European anthropologists who first studied them, Neanderthals were the embodiment of primitive humans, subhumans if you will," says Fred H. Smith, a physical anthropologist at Loyola University in Chicago who has been studying Neanderthal DNA. "They were believed to be scavengers who made primitive tools and were incapable of language or symbolic thought." Now, he says, researchers believe that Neanderthals "were highly intelligent, able to adapt to a wide variety of ecological zones, and capable of developing highly functional tools to help them do so. They were quite accomplished."

"Without instruction, most of us would not be able to produce such tools," Maureille says of the flint scraper (above), whose ridges suggest a Neanderthal made it with a bone hammer.

Contrary to the view that Neanderthals were evolutionary failures—they died out about 28,000 years ago—they actually had quite a run. "If you take success to mean the ability to survive in hostile, changing environments, then Neanderthals were a great success," says archaeologist John Shea of the State University of New York at Stony Brook. "They lived 250,000 years or more in the harshest climates experienced by primates, not just humans." In contrast, we modern humans have only been around for 100,000 years or so and moved into colder, temperate regions only in the past 40,000 years.

Though the fossil evidence is not definitive, Neanderthals appear to have descended from an earlier human species, *Homo erectus,* between 500,000 to 300,000 years ago. Neanderthals shared many features with their ancestors—a prominent brow, weak chin, sloping skull and large nose—but were as big-brained as the anatomically modern humans that later colonized Europe, *Homo sapiens.* At the same time, Neanderthals were stocky, a build that would have conserved heat efficiently. From musculature marks on Neanderthal fossils and the heft of arm and leg bones, researchers conclude they were also incredibly strong. Yet their hands were remarkably like those of modern humans; a study published this past March in *Nature* shows that Neanderthals, contrary to previous thinking, could touch index finger and thumb, which would have given them considerable dexterity.

Neanderthal fossils suggest that they must have endured a lot of pain. "When you look at adult Neanderthal fossils, particularly the bones of the arms and skull, you see [evidence of] fractures," says Erik Trinkaus, an anthropologist at Washington University in St. Louis. "I've yet to see an adult Neanderthal skeleton that doesn't have at least one fracture, and in adults in their 30s, it's common to see multiple healed fractures." (That they suffered so many broken bones suggests they hunted large animals up close, probably stabbing prey with heavy spears—a risky tactic.) In addition, fossil evidence indicates that Neanderthals suffered from a wide range of ailments, including pneumonia and malnourishment. Still, they persevered, in some cases living to the ripe old age of 45 or so.

Perhaps surprisingly, Neanderthals must also have been caring: to survive disabling injury or illness requires the help of fellow clan members, paleoanthropologists say. A telling example came from an Iraqi cave known as Shanidar, 250 miles north of Baghdad, near the border with Turkey and Iran. There, archaeologist Ralph Solecki discovered nine nearly complete Neanderthal skeletons in the late 1950s. One belonged to a 40- to 45-year-old male with several major fractures. A blow to the left side of his head had crushed an eye socket and almost certainly blinded him. The bones of his right shoulder and upper arm appeared shriveled, most likely the result of a trauma that led to the amputation of his right forearm. His right foot and lower right leg had also been broken while he was alive. Abnormal wear in his right knee, ankle and foot shows that he suffered from injury-induced arthritis that would have made walking painful, if not impossible. Researchers don't know how he was injured but believe that he could not have survived long without a hand from his fellow man.

"This was really the first demonstration that Neanderthals behaved in what we think of as a fundamentally human way," says Trinkaus, who in the 1970s helped reconstruct and catalog the Shanidar fossil collection in Baghdad.

JOE ALPER, a freelance writer in Louisville, Colorado, is a frequent contributor to Science *magazine. This is his first article for* SMITHSONIAN. *Paris-based ERIC SANDER photographed "Master Class" in our October 2002 issue. STAN FELLOWS' illustrations appeared in "Hamilton Takes Command," in the January issue.*

(One of the skeletons is held by the Smithsonian Institution's National Museum of Natural History.) "The result was that those of us studying Neanderthals started thinking about these people in terms of their behavior and not just their anatomy."

NEANDERTHALS INHABITED a vast area roughly from present-day England east to Uzbekistan and south nearly to the Red Sea. Their time spanned periods in which glaciers advanced and retreated again and again. But the Neanderthals adjusted. When the glaciers moved in and edible plants became scarcer, they relied more heavily on large, hoofed animals for food, hunting the reindeer and wild horses that grazed the steppes and tundra.

Paleoanthropologists have no idea how many Neanderthals existed (crude estimates are in the many thousands), but archaeologists have found more fossils from Neanderthals than from any extinct human species. The first Neanderthal fossil was uncovered in Belgium in 1830, though nobody accurately identified it for more than a century. In 1848, the Forbes Quarry in Gibraltar yielded one of the most complete Neanderthal skulls ever found, but it, too, went unidentified, for 15 years. The name Neanderthal arose after quarrymen in Germany's Neander Valley found a cranium and several long bones in 1856; they gave the specimens to a local naturalist, Johann Karl Fuhlrott, who soon recognized them as the legacy of a previously unknown type of human. Over the years, France, the Iberian Peninsula, southern Italy and the Levant have yielded abundances of Neanderthal remains, and those finds are being supplemented by newly opened excavations in Ukraine and Georgia. "It seems that everywhere we look, we're finding Neanderthal remains," says Loyola's Smith. "It's an exciting time to be studying Neanderthals."

Clues to some Neanderthal ways of life come from chemical analyses of fossilized bones, which confirm that Neanderthals were meat eaters. Microscopic studies hint at cannibalism; fossilized deer and Neanderthal bones found at the same site bear identical scrape marks, as though the same tool removed the muscle from both animals.

The arrangement of fossilized Neanderthal skeletons in the ground demonstrates to many archaeologists that Neanderthals buried their dead. "They might not have done so with elaborate ritual, since there has never been solid evidence that they included symbolic objects in graves, but it is clear that they did not just dump their dead with the rest of the trash to be picked over by hyenas and other scavengers," says archaeologist Francesco d'Errico of the University of Bordeaux.

Paleoanthropologists generally agree that Neanderthals lived in groups of 10 to 15, counting children. That assessment is based on a few lines of evidence, including the limited remains at burial sites and the modest size of rock shelters. Also, Neanderthals were top predators, and some top predators, such as lions and wolves, live in small groups.

Steven Kuhn, an archaeologist at the University of Arizona, says experts "can infer quite a bit about who Neanderthal was by studying tools in conjunction with the other artifacts they left behind." For instance, recovered stone tools are typically fashioned from nearby sources of flint or quartz, indicating to some researchers that a Neanderthal group did not necessarily range far.

The typical Neanderthal tool kit contained a variety of implements, including large spear points and knives that would have been hafted, or set in wooden handles. Other tools were suitable for cutting meat, cracking open bones (to get at fat-rich marrow) or scraping hides (useful for clothing, blankets or shelter). Yet other stone tools were used for woodworking; among the very few wooden artifacts associated with Neanderthal sites are objects that resemble spears, plates and pegs.

THERE ARE HINTS OF CANNIBALISM: DEER AND NEANDERTHAL BONES AT THE SAME SITE BEAR IDENTICAL SCRAPE MARKS.

A model Neanderthal skeleton (left, from the American Museum of Natural History) resembles that of a modern human (right) but has a broader rib cage, heavier limbs and wider hips.

JAMES ESTRIN / NEW YORK TIMES

I get a feel for Neanderthal handiwork in Maureille's office, where plastic milk crates are stacked three high in front of his desk. They're stuffed with plastic bags full of olive and tan flints from Les Pradelles. With his encouragement, I take a palm-size, D-shaped flint out of a bag. Its surface is scarred as though by chipping, and the flat side has a thin edge. I readily imagine I could scrape a hide with it or whittle a stick. The piece, Maureille says, is about 60,000 years old. "As you can see from the number of lithics we've found," he adds, referring to the crates piling up in his office, "Neanderthals were prolific and accomplished toolmakers."

AMONG THE NEW APPROACHES to Neanderthal study is what might be called paleo-mimicry, in which researchers themselves fashion tools to test their ideas. "What we do is make our own tools out of flint, use them as a Neanderthal might have, and then look at the fine detail of the cutting edges with a high-powered microscope," explains Michael Bisson, chairman of anthropology at McGill University in Montreal. "A tool used to work wood will have one kind of wear pattern that differs from that seen when a tool is used to cut meat from a bone, and we can see those different patterns on the implements recovered from Neanderthal sites." Similarly, tools used to scrape hide show few microscopic scars, their edges having been smoothed by repeated rubbing against skin, just as stropping a straight razor will hone its edge. As Kuhn, who has also tried to duplicate Neanderthal handicraft, says: "There is no evidence of really fine, precise work, but they were skilled in what they did."

Based on the consistent form and quality of the tools found at sites across Europe and western Asia, it appears likely that Neanderthal was able to pass along his toolmaking techniques to others. "Each Neanderthal or Neanderthal group did not have to reinvent the wheel when it came to their technologies," says Bisson.

The kinds of tools that Neanderthals began making about 200,000 years ago are known as Mousterian, after the site in France where thousands of artifacts were first found. Neanderthals struck off pieces from a rock "core" to make an implement, but the "flaking" process was not random; they evidently examined a core much as a diamond cutter analyzes a rough gemstone today, trying to strike just the spot that would yield "flakes," for knives or spear points, requiring little sharpening or shaping.

Around 40,000 years ago, Neanderthals innovated again. In what passes for the blink of an eye in paleoanthropology, some Neanderthals were suddenly making long, thin stone blades and hafting more tools. Excavations in southwest France and northern Spain have uncovered Neanderthal tools betraying a more refined technique involving, Kuhn speculates, the use of soft hammers made of antler or bone.

What happened? According to the conventional wisdom, there was a culture clash. In the early 20th century, when researchers first discovered those "improved" lithics—called Châtelperronian and Uluzzian, depending on where they were found—they saw the relics as evidence that modern humans, Homo sapiens or Cro-Magnon, had arrived in Neanderthal territory. That's because the tools resembled those unequivocally associated with anatomically modern humans, who began colonizing western Europe 38,000 years ago. And early efforts to assign a date to those Neanderthal lithics yielded time frames consistent with the arrival of modern humans.

But more recent discoveries and studies, including tests that showed the lithics to be older than previously believed, have prompted d'Errico and others to argue that Neanderthals advanced on their own. "They could respond to some change in their environment that required them to improve their technology," he says. "They could behave like modern humans."

Meanwhile, these "late" Neanderthals also discovered ornamentation, says d'Errico and his archaeologist colleague João Zilhão of the University of Lisbon. Their evidence includes items made of bone, ivory and animal teeth marked with grooves and perforations. The researchers and others have also found dozens of pieces of sharpened manganese dioxide—black crayons, essentially—that Neanderthals probably used to color animal skins or even their own. In his office at the University of Bordeaux, d'Errico hands me a chunk of manganese dioxide. It feels silky, like soapstone. "Toward the end of their time on earth," he says, "Neanderthals were using technology as advanced as that of con-

Indicating that Neanderthals buried their dead, a stone-lined pit in southwest France held the 70,000-year-old remains of a man wrapped in bearskin. The illustration is based on a diorama at Smithsonian's National Museum of Natural History.

Eventually, Neanderthals thought symbolically and used ornamentation, perhaps wielding manganese-rich rocks (left, a 40,000- to 60,000-year-old specimen) as crayons to mark animal hides or their own skin. D'Errico shows the art potential of one such ore.

AS NEANDERTHALS RETREATED, MODERN HUMANS WERE RIGHT ON THEIR HEELS. THE TWO MAY HAVE MATED—OR TRIED TO.

temporary anatomically modern humans and were using symbolism in much the same way."

Generally, anthropologists and archaeologists today prefer two scenarios for how Neanderthals became increasingly resourceful in the days before they vanished. On the one hand, it may be that Neanderthals picked up a few new technologies from invading humans in an effort to copy their cousins. On the other, Neanderthals learned to innovate in parallel with anatomically modern human beings, our ancestors.

MOST RESEARCHERS AGREE that Neanderthals were skilled hunters and craftsmen who made tools, used fire, buried their dead (at least on occasion), cared for their sick and injured and even had a few symbolic notions. Likewise, most researchers believe that Neanderthals probably had some facility for language, at least as we usually think of it. It's not far-fetched to think that language skills developed when Neanderthal groups mingled and exchanged mates; such interactions may have been necessary for survival, some researchers speculate, because Neanderthal groups were too small to sustain the species. "You need to have a breeding population of at least 250 adults, so some kind of exchange had to take place," says archaeologist Ofer Bar-Yosef of Harvard University. "We see this type of behavior in all hunter-gatherer cultures, which is essentially what Neanderthals had."

But if Neanderthals were so smart, why did they go extinct? "That's a question we'll never really have an answer to," says Clive Finlayson, who runs the Gibraltar Museum, "though it doesn't stop any of us from putting forth some pretty elaborate scenarios." Many researchers are loath even to speculate on the cause of Neanderthals' demise, but Finlayson suggests that a combination of climate change and the cumulative effect of repeated population busts eventually did them in. "I think it's the culmination of 100,000 years of climate hitting Neanderthals hard, their population diving during the cold years, rebounding some during warm years, then diving further when it got cold again," Finlayson says.

As Neanderthals retreated into present-day southern Spain and parts of Croatia toward the end of their time, modern human beings were right on their heels. Some researchers, like Smith, believe that Neanderthals and Cro-Magnon humans probably mated, if only in limited numbers. The question of whether Neanderthals and modern humans bred might be resolved within a decade by scientists studying DNA samples from Neanderthal and Cro-Magnon fossils.

But others argue that any encounter was likely to be hostile. "Brotherly love is not the way I'd describe any interaction between different groups of humans," Shea says. In fact, he speculates that modern humans were superior warriors and wiped out the Neanderthals. "Modern humans are very competitive and really good at using projectile weapons to kill from a distance," he says, adding they also probably worked together better in large groups, providing a battlefield edge.

In the end, Neanderthals, though handy, big-brained, brawny and persistent, went the way of every human species but one. "There have been a great many experiments at being human preceding us and none of them made it, so we should not think poorly of Neanderthal just because they went extinct," says Rick Potts, head of the Smithsonian's Human Origins Program. "Given that Neanderthal possessed the very traits that we think guarantee our success should make us pause about our place here on earth." ○

Land Shark

In his noir satires, novelist and eco-warrior Carl Hiaasen ravages those who dare to desecrate his beloved South Florida landscape

~ BY LINTON WEEKS

STANDING AT THE WHEEL of his 17-foot skiff, Carl Hiaasen points to a large, graceful bird gliding in the blue distance. Black with a white patch above the tail, a wondrously wide wingspan and a gentle swaying motion, it skims low over the mangrove islands of Florida Bay and the waters separating the Everglades, at Florida's southern tip, from the Keys.

"That's an Everglades kite," says Hiaasen, 50, adjusting his baseball cap and sunglasses. "They're rare. It's looking for snails; that's the only thing it eats." Leaning into a long pole, he eases the boat, its engine cut, away from land, out into the shallows. "I've seen only a half-dozen in my whole life."

Since his first fishing trips here as a child, the *Miami Herald* columnist and wisecracking author of 13 subversively entertaining mystery novels has carried on a love affair with the waters and land of the Florida Keys. He's best known for *Strip Tease,* from which a roundly panned 1996 movie was made, and *Tourist Season,* which prompted author Tony Hillerman, in a 1986 *New York Times* review, to dub him "the Mark Twain of the crime novel." Hiaasen, said reviewer Tom Nolan in the *Wall Street Journal* in 1995, "writes with the gleeful social scrutiny of Tom Wolfe and the twisted imagination of Hunter S. Thompson." Most recently, Hiaasen won a Newbery Honor award for the young-adult novel *Hoot*, published this past fall. His works have sold five million copies and been translated into 28 languages. The *London Observer* has called Hiaasen "America's finest satirical novelist."

At heart, though, Hiaasen is an environmentalist. For the past 18 years, he has used his take-no-prisoners newspaper column to hector drug runners, corrupt politicians, unreconstructed doctors and lawyers, and wetlands-draining real estate developers. As a satirist with an eco-warrior's agenda, he has skewered these same offenders in his novels.

On a Friday morning in downtown Miami, the throngs attending the Miami International Book Fair move like schools of fish through the streets. Authors have converged from around the country to promote their books. Hiaasen has driven nearly two hours from his home on Lower Matecumbe Key to discuss *Hoot*, his first foray into children's fiction.

As he leans on the lectern—with wire-rimmed eyeglasses, silver hair, gray jacket, khakis, rose-colored dress shirt—Hiaasen's delivery style hovers somewhere between timid adolescent and comedic wiseacre. The saga of three youngsters who fight to save a rare, burrowing-owl habitat from developers, *Hoot* is rooted in Hiaasen's own childhood. "I remember when you could get on your bike and ride for a mile and you were in the swamps," he tells the audience, which is mostly kids. "There were no malls."

The oldest of four children, Hiaasen was born in Ft. Lauderdale in 1953, the son of a lawyer, Odel, and a former teacher, Patricia. Ft. Lauderdale in the 1950s was a sleepy town fast becoming a vacation mecca and retirement community, 25 miles north of Miami. Everywhere he looked, condominiums were going up. "Forty years later," he says, "it still ticks me off. It was very frustrating. I didn't know how to fight back."

Hiaasen has never forgotten the first time his father took him fishing. "The Keys never looked so enchanting as they did on that morning," he wrote in a 1995 *Herald* column. "The deep-running Atlantic was undeniably impressive, but the calm crystal flats of the backcountry intrigued me the most. To wade the banks was to enter a boundless natural aquarium: starfish, nurse sharks, eagle rays, barracuda, bonefish, permit and tarpon, all swimming literally at your feet."

After high school, Hiaasen got married and had a son, Scott, now 31, who is a re-

Hiaasen (right, in the Keys in January) says he has seen too much of wild Florida disappear: "It was steamrolled," he insists.

P. 89 MICHEAL MCLAUGHLIN

"The island had sprouted skyline;
a concrete picket of towering hotels
and high-rise condominiums. . . .
He hoped he was seeing a mirage,
a trick of the fog and clouds, but
when he glanced up, the hotels and
condos were still there. . . . He
sunk to his knees and punched the
hard-packed sand with both fists. . . . "

—*SICK PUPPY* (1999)

porter for the Cleveland *Plain Dealer*. (Hiaasen's first marriage ended in divorce in 1996.) He attended Emory University in Atlanta and graduated from the University of Florida with a journalism degree in 1974.

While working as a reporter for *Cocoa Today* (now called *Florida Today)* in the town of Cocoa just east of Orlando, he became increasingly dispirited by the development in South Florida. "It was getting made into a parking lot. I just hated it." Shortly after his father died, in 1976, the *Herald* offered Hiaasen a $100 a week salary increase and, coincidentally, the chance to be near his mother. He took it. (His mother, now 75, still lives in the house in which Hiaasen grew up.)

By the early '80s Hiaasen and fellow *Herald* reporter Brian Duffy had launched an investigation of Port Bougainville, the largest condominium and hotel development—2,800 units complete with canals and floating gondolas—ever planned for the Keys. In a series of articles, the journalists reported that developers had misrepresented the project's size and had proceeded without final, necessary approvals from the state environmental regulation department and the Army Corps of Engineers. The company "had already started destroying hammocks of mangroves," Hiaasen recalls. The pair dealt the enterprise a mortal blow with their revelation that an elected official who voted on construction projects had been seen handing out Port Bougainville brochures.

"Carl is a hell of a digger," says Duffy, now editor of *U.S. News & World Report*. "He loved to get that telling detail, whether from the fifth re-interview of a source or from a mind-numbing government document."

"He's got a more visceral reaction to development than anyone I've ever known. He really feels it," says Jeff Leen, a former *Herald* colleague who now heads the *Washington Post*'s investigative unit.

Shortly before the Port Bougainville story broke, an editor at the paper, William D. Montalbano, suggested that he and Hiaasen write a novel together. *Powder Burn*, about the city's cocaine wars, appeared in 1981 to critical praise. The duo wrote three books before Hiaasen decided to go solo in 1985. *Tourist Season* (1986), a sardonic indictment of corruption in South Florida, put Hiaasen on the crime-writing map. Soon after the novel was published, Hiaasen appeared on ABC's "Good Morning America," where he opined that "there's nothing wrong with Florida that a force-five hurricane wouldn't fix." Miami Mayor Xavier Suarez, incensed by the remark, suggested in an open letter published in the *Herald* that Hiaasen "displayed a one-dimensional, exponential hatred of South Florida" and that Hiaasen should take it upon himself to issue an apology to "the entire human race."

In all, Hiaasen has written more than 1,500 newspaper columns, 13 novels, and a book-length diatribe against the Walt Disney Company titled *Team Rodent: How Disney Devours the World*. "After opening with an overbilious screed against the company's signature blandness," wrote a critic for *Entertainment Weekly*, "the author settles down and rakes good muck." A spokesperson for Disney likened *Rodent* to "leftovers that have been heated up for a third time."

But no cause has engaged—or, for that matter, outraged—Hiaasen more than the plight of Florida's Everglades, the fragile wetland ecosystem that once stretched across four million acres but has been reduced to half that size by farms and development. Backed by Florida governor Jeb Bush, the president's brother, an $8 billion plan to restore the Everglades by rerouting a trillion gallons of water to it by the year 2006 seemed on track. Then, in late April, Florida legislators, apparently yielding to entreaties by sugar-industry lobbyists who oppose the plan, introduced legislation that would both weaken it and delay compliance with it by 20 years. In the past, Hiaasen has praised Bush ("He put a lot on the line") for his support of the project, but as we went to press, the novelist feared the governor was waffling on the issue. "Overwhelmingly, from Key West to Tallahassee, voters have said saving the Everglades is not only a priority but a moral imperative. If it looks like the governor is caving, it's going to be politically risky for him."

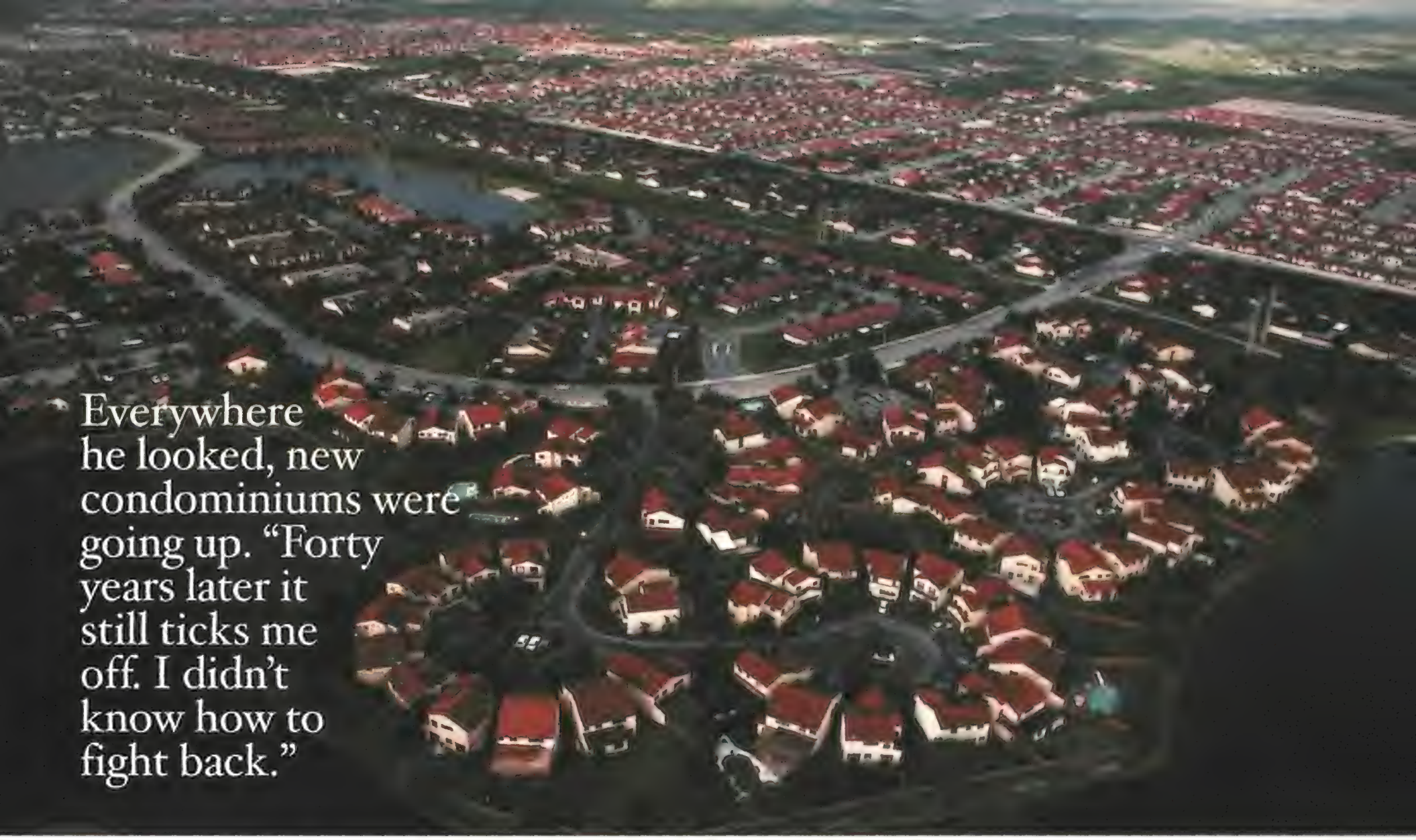
Hiaasen (at age 17 in 1970, and in 1997) laments the loss of childhood haunts: "I remember you would get on your bike and ride for a mile and you were in the swamps. There were no malls."

AS A NOVELIST, Hiaasen's strengths lie in memorable characters, unpredictable comedy and a crusader's commitment to the environment. "To a great degree in Carl's fiction," says Sonny Mehta, president of Alfred A. Knopf and Hiaasen's editor, "the villains are the people who have wrecked Eden—whether they're developers, sugar plantation people or any of the carpetbaggers who have made a buck in the process of merchandising paradise."

Says fellow satire novelist Christopher Buckley (*No Way to Treat a First Lady*): "Carl has been prophetic in his environmentalism. He's also been hilarious—a comic Edward Abbey [the environmentalist-novelist]—which is some mean trick and a pretty cool perfecta at the literary dog track."

LINTON WEEKS is a staff writer at the Washington Post.

CARL HIAASEN COLLECTION; TIM CHAPMAN / MIAMI HERALD


Everywhere he looked, new condominiums were going up. "Forty years later it still ticks me off. I didn't know how to fight back."

A development west of Ft. Lauderdale: "There's nothing wrong with Florida," says Hiaasen, "that a force-five hurricane wouldn't fix."

KEVIN FLEMING / CORBIS

SPEND TIME ON SOME of the Middle Keys—Upper Matecumbe, Lower Matecumbe, Islamorada—and you might run into Hiaasen. He shops at the all-night grocery on Islamorada and grabs a fish sandwich at the Hungry Tarpon on Lower Matecumbe. Padding around Hooked on Books, one of Islamorada's bookstores, he looks like countless other "Keys fleas"—blue jeans, blue shirt, blue eyes, barefoot, tan. He's lived here for a decade.

On a recent moonless night, he and his wife of four years, Fenia, were sleeping with the windows open. (The home they share with their son, 3-year-old Quinn, and Fenia's son from an earlier marriage, 12-year-old Ryan, overlooks Florida Bay.) They could hear bottle-nosed dolphins frolicking in the waves just outside, spouting air through their blowholes. Another day, nine manatees swam up to their dock. "They are great, gentle things," he says. Hiaasen called Fenia on her cell phone—she was out doing errands—and told her to buy up all the lettuce in the grocery store. He knows he's not supposed to feed the manatees, but he did it anyway.

This morning, Hiaasen is piloting his skiff through the saltwater estuarial section of Everglades National Park and railing against Jet Skis. "The idiots think it's fun to harass wildlife," he says. "You always dream about something terrible happening to them." He smiles wickedly. He rants against the builders of subdivisions. Florida rivers, he explains, flow toward the sea, cleansing the Everglades with freshwater before emptying into the ocean. But developers siphon freshwater from the Everglades for irrigation. "Without the freshwater flushing," Hiaasen explains, "the water in Florida Bay becomes too salty to support the vast array of wildlife."

He motors in and out of mangrove islands, threading his way through a labyrinth of man-made shortcuts with quirky names—Bucky Stark's Wheel Ditch, Crocodile Dragover. Pulling close to one island, Hiaasen points to a circle of white in the green waters. "That's mullet mud," he says of the swirling sand, the result of a stirred-up school of baitfish. "Look!" he says, pointing into waters four feet deep. "That's a sleeping lemon shark. You *never* see sharks sleeping."

Back in his office, which he built next to his house—he files his *Herald* columns from here—Hiaasen picks up a favorite book, *The Everglades: River of Grass*, written in 1947 by Marjory Stoneman Douglas. "Her efforts got the Everglades National Park dedicated," Hiaasen says. Douglas founded Friends of the Everglades, a nonprofit group dedicated to saving the wetlands. Juanita Greene, the organization's spokesperson, says that Hiaasen "has done the best job of spreading the word about the Everglades problem."

Hanging on the wall is a photograph—of the moon rising over cypress trees—taken in the Everglades by another champion of wild Florida, Clyde Butcher. And there's Hiaasen's framed certificate for largest bonefish, from the Bonefishing World Championship, 1998. Sun streams through the window. Sea breezes flow like rainwater through the tall grass. Here, far from the chaos of Miami, Hiaasen is recharging his batteries, gathering strength to battle the forces that would destroy his world. ○

North to Alaska

In 1899, railroad magnate Edward Harriman invited some of the most preeminent scientists in America to join him on a working cruise to Alaska, then largely unexplored. More than a century later, the nation still has reasons to be grateful ~ BY KEN CHOWDER

The 23 "scientific men" (with shipmates at a deserted Tlingit village) invited by Harriman (far right, in hat and white shirt behind seated woman) constituted a who's who of American natural history. One scientist said that Alaska is "grander than anything else of the kind."

FOR C. HART MERRIAM, it all began one March day in 1899 when a brash fellow with a bushy mustache strode unannounced into his Washington, D.C. office. Merriam, a distinguished biologist and a founder of the National Geographic Society, was serving as the first chief of the Division of Biological Survey, the forerunner of the U.S. Fish and Wildlife Service. His visitor identified himself as Edward Harriman. "He . . . told me in an unassuming, matter-of-fact way that he was planning a trip along the Alaskan coast," Merriam later recalled, "and desired to take along a party of scientific men." Harriman then asked Merriam to recruit those scientists for him—adding that he would, of course, pay everyone's expenses.

Harriman (below) photographed the *Elder* early in the trip. "It was a kind of Camelot afloat on Alaskan seas," write historians Sloan and Goetzmann, "where the savants were enabled to go on their individual quests, however strange they might have seemed."

When Merriam found out that Edward Harriman was *the* E. H. Harriman who chaired the board of the Union Pacific Railroad and was reputed to be the most powerful man in America, he began firing off telegrams to his many acquaintances in the scientific world: "Mr. Harriman requests me to ask you to join . . . and I earnestly trust you will do so. The opportunity is one in a lifetime."

He was right about that. Harriman was nothing if not ambitious: he wanted to catalog Alaska's flora and fauna from the lush southern panhandle north to Prince William Sound, then west along the Aleutian Chain and all the way up to the Pribilof Islands. His exhilarated corps of "scientific men," it turned out, discovered hundreds of new species, charted miles of little-visited territory and left such a vivid record of their findings that a century later a second expedition set out to assess the changes that have taken place along that same route. (On June 11, most PBS stations will broadcast a two-hour Florentine Films/Hott Productions documentary about both voyages.)

As it was in his own time, Harriman's 9,000-mile odyssey is still being hailed as a scientific milestone. "It was the last of the great Western explorations that began with Lewis and Clark," says William Cronon, professor of environmental studies at the University of Wisconsin. A contemporary parallel, says historian Kay Sloan, author with William Goetzmann of *Looking Far North: The Harriman Expedition to Alaska, 1899*, "would be Bill Gates leading a scientific expedition to the moon."

At least we can see the moon. Alaska at 19th century's end was the ultimate back of beyond as far as most Americans were concerned. After President Andrew Johnson's wily secretary of state William H. Seward—first appointed by Lincoln bought the territory in 1867 for $7.2 million, he was roundly thumped in the press. "Russia has sold us a sucked orange," groused one New York newspaper. Some orange—more than half a million square miles, an area twice the size of Texas, encompassing 39 mountain ranges, 3,000 rivers and upwards of 2,000 islands. Three decades after "Seward's Folly," Alaska remained one of the largest unexplored wildernesses on the continent.

It took Merriam only a few weeks to sign up 23 of the most esteemed scientists in their fields, plus a cadre of artists, photographers, poets and authors. Among them were nature writers John Burroughs and John Muir; George Bird Grinnell, the crusading editor of *Forest and Stream* and a founder of the

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KEN CHOWDER, a freelance writer based in Denmark, has written numerous documentaries, articles and novels.

PP. 92, 93 HARRIMAN ALASKA SERIES VOLUME II, SMITHSONIAN INSTITUTION (WASHINGTON DC) 1991; PP. 92AND 94 SMITHSONIAN INSTITUTION ARCHIVES, RECORD UNIT 7243; BOTTOM: ORANGE COUNTY HISTORICAL SOCIETY

"Scientific explorers are not easily managed, and in large mixed lots are rather inflammable and explosive," Muir warned, "especially when compressed on a ship."

Audubon Society; a young painter of birds, Louis Agassiz Fuertes, and an obscure society photographer named Edward Curtis. Not surprisingly, Merriam also decided to avail himself of Harriman's hospitality.

All in all, it was probably the most high-powered group ever assembled in the history of American exploration. But would so many big thinkers be able to get along? "Scientific explorers are not easily managed, and in large mixed lots are rather inflammable and explosive," Muir warned, "especially when compressed on a ship."

But, oh, what a ship. Harriman, it was clear, did not intend to rough it. He had refitted the 250-foot-long iron steamer *George W. Elder* with a stateroom for each expedition member. The crew alone numbered 65—not counting the ten other members of Harriman's family, their three maids, two stenographers, two doctors, a nurse, an excellent chef and a chaplain. "We take aboard eleven fat steers, a flock of sheep, chickens, and turkeys, a milch cow, and a span of horses," John Burroughs crowed. Other essential items included cases of champagne and cigars, an organ and piano, a 500-volume library and even an early gramophone.

On May 31, 1899, a cheering crowd gathered at the Seattle dock to watch the *Elder* steam away in slanting rain, and the departure made front-page news all over the world. But for any passenger who believed he or she was heading for a pristine Eden, some rude surprises were in store.

Six days out of Seattle in Skagway, a quagmire of flimsy hotels and saloons and a jumping-off point for the Yukon goldfields, the Harriman party confronted the gritty reality of the spreading Klondike gold rush. During an outing on the new White Pass Railroad, built to carry miners up into the mountains, the scientists saw carcasses of horses frozen

Though Harriman was vastly rich, he sought social acceptability and saw the cruise as a way to enhance his reputation as a philanthropist. Aboard ship, he formed committees on zoology, botany and mining and even plotted the ship's course (below).

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Alaska scared John Burroughs: "It was as appalling to look up as to look down," he wrote. "Chaos and death below us, impending avalanches of hanging rocks above us."

on the rugged trail. Later, near Orca, "Miners were coming out destitute and without one cent's worth of gold," Burroughs wrote. "Scurvy had broken out among them. . . . Alaska is full of such adventurers, ransacking the land."

But Alaska was full of astonishments too. When the *Elder* steamed into Glacier Bay, west of Juneau, on June 8, Burroughs was amazed. "Enormous [ice]bergs . . . rise slowly and majestically, like huge monsters of the deep . . . ," he marveled. "Nothing . . . had prepared us for the color of the ice . . . its deep, almost indigo blue." Burroughs, then America's favorite nature writer, was a small, mild man who had spent most of his life in New York's benign Catskill Mountains. Alaska scared him: "[I]t was as appalling to look up as to look down; chaos and death below us, impending avalanches of hanging rocks above us."

Naturalist and writer Burroughs (above, left, with conservationist Muir) fretted that he was "the most ignorant man" aboard ship.

The trip's other Johnny was right at home in Alaska. Born in Scotland, John Muir had grown up on an isolated Wisconsin farm, then adventured for years in the rugged wilds of California's Yosemite Valley. There he began writing about the natural world and started the Sierra Club. He was the country's foremost champion of wilderness and had visited Alaska no less than five times, including months in Glacier Bay. "In John Muir we had an authority on glaciers," Burroughs said, "and a thorough one—so thorough that he would not allow the rest of the party to have an opinion on the subject."

It was no surprise two men so different in temperament and background did not always see eye to eye, particularly when it came to Edward Harriman. Burroughs liked him, but Muir was "rather repelled" by the seemingly coldhearted businessman, perhaps not least because Harriman cherished a sport Muir detested: hunting. In fact, the railroad man's dream was to shoot and mount a giant Alaskan brown bear, and to that end he had brought along a complement of 11 hunters, packers and camp hands, plus two taxidermists.

In a sense, the restless tycoon had been hunting all his life—for success. The son of a minister in New York, Harriman had grown up in a family that had seen better days. He quit school at 14 to become a Wall Street errand boy. His rise from that humble station was meteoric. At 22, he became a member of the New York Stock Exchange. At 33, he acquired his first rail line. He seized control of the huge but ailing Union Pacific Railroad at 50, then spent months inspecting every mile of track, every station, flatcar and engine. He got his railroad running smoothly, but in the process he drove himself to exhaustion. When his doctor told him to get some rest, Harriman, then 51, decided to "vacation" in Alaska.

His reasons for sponsoring the expedition have long been debated. Harriman himself painted a rosy picture: "What I most enjoy is the power of creation, getting into partnership with Nature in doing good . . . making everybody and everything a little better." Some of his contemporaries believed he had more complicated motives. "He was looked at askance [by New York's social elite]," one acquaintance observed. "His ways and manners jarred somewhat . . . and he was considered by some as not quite belonging." The trip could help. Then, too, this was an age of magnificent engineering breakthroughs like the Suez Canal, the Eiffel Tower and the Brooklyn Bridge. Kay Sloan and William Goetzmann believe Harriman wanted to accomplish a similar feat. His aim, they contend, was to scout out and buy up a huge swath of Alaska and build a railroad to Siberia and on around the world.

Whatever his ultimate ambition, there was no doubting Harriman's commitment to scientific exploration. The ship "put us ashore wherever we liked," Muir reported, "bays, coves, the mouths of streams, etc.—to suit [our] convenience." At Glacier Bay, zoologist Trevor Kincaid pried open icy crevices and found "glacier worms," a type of rare tube worm. Ornithologists Albert Fisher and Robert Ridgway, with artist Louis Agassiz Fuertes, collected 45 mammals and 25 birds at Point Gustavus. Another scientist found a nesting ptarmigan so tame it could be picked up and held.

In mid-June, the *Elder* steamed across the Gulf of Alaska to Yakutat Bay near the western border of Canada. Kincaid and his fellow zoologists discovered 31 new insects and captured 22 different kinds of mice.

The steamer anchored near an encampment of seal-hunting Indians on the south side of the bay. Rank-smelling carcasses lay in rows on the pebbly beach. George Bird Grinnell

SMITHSONIAN INSTITUTION ARCHIVES, RECORD UNIT 7243; P. 97 HARRIMAN ALASKA SERIES VOLUME II. SMITHSONIAN INSTITUTION (WASHINGTON, D.C.) 1991

Louis Agassiz Fuertes' paintings of birds in Alaska (below, rufous hummingbirds) would earn him comparisons to Audubon.

RUFOUS HUMMINGBIRD, SELASPHORUS RUFUS

watched with fascination as women and children skinned the animals, cut out the blubber and roasted seal meat over an open fire. "From the [tent] poles hang . . . strips of blubber and braided seal intestines," Grinnell noted. "All these things are eaten . . . the flippers appear to be regarded as especially choice."

Though most of the scientists had come to study glaciers and mountains or wildlife and plants, Grinnell, an expert on the Indians of the American West, was more interested in documenting the lives of northern peoples. It didn't take him long to discover that he had an able assistant in the young photographer Edward Curtis.

Curtis had made a modest living in Seattle photographing wealthy socialites at their weddings and balls. Now, under Grinnell's influence, Curtis started focusing on Alaska's natives. "The . . . Indian women frowned upon our photographers," Burroughs said. "It took a good deal of watching and waiting and maneuvering to get a good shot." But Curtis was patient. Although he could not have known it at the time, he had found his life's vocation.

From Yakutat Bay the expedition headed north to Prince William Sound, the ravishing area that would eventually come to exemplify Alaska for millions of cruise ship tourists. The tiny village of Orca, the *Elder*'s first stop there, was dominated by an enormous fish cannery. Seeing miles of coastline clogged with rotting salmon heads, Grinnell was irate. "The canners . . . [grasp] eagerly for everything that is within their reach," he fumed. "Their motto seems to be, 'If I do not take all I can get, somebody else will.'. . . The salmon of Alaska . . . are being destroyed."

Beyond Orca, the *Elder* churned deeper into Prince William Sound until it came up against a towering glacier, which, according to the map, was as far as the ship could go. After Muir spotted a narrow gap between the ice and the rocky coast, Harriman ordered the captain to steer into the dangerously tight passage. Poet Charles Keeler described the moment: "Slowly and cautiously we advanced. . . . The great blocks of ice thundered off from the glacier into the sea close beside us." Then the ship rounded a point, and a narrow inlet suddenly became visible. The captain warned that there might be rocks in those uncharted waters. According to Muir, "The passage gradually opened into a magnificent icy fiord about twelve miles long." Harriman ordered the captain to proceed full speed ahead up the middle of the new fjord. As the ship barreled along, Harriman shouted, "We will discover a new Northwest Passage!"

Instead they discovered a dazzling series of glaciers—five or six in all—never before seen by whites. The largest glacier was named after Harriman. Muir's feelings for the man were changing from scorn to admiration. "I soon saw that Mr. Harriman was uncommon," he explained. "Nothing in his way could daunt him."

But Harriman, tired of "ice time," was itching for big game. When he heard of abundant bear on Kodiak Island, he ordered the ship there. After the glacial "ice chests" they'd just

Alaska Then and Now

A commemorative voyage—of 21st-century scientists—sets out to reconnoiter the 49th state

ECOLOGY IS DEDICATED to the proposition that everything is connected to everything else, as Thomas Litwin, an ecologist and science administrator at Smith College in Northampton, Massachusetts, can attest. Studying ornithology at Cornell University in 1979, he fell in love with a collection of bird illustrations there by Louis Agassiz Fuertes, a member of the Harriman Alaska Expedition. That led to a lifelong obsession with the expedition itself. Nearly two decades later, Litwin began having "crazy daydreams" about organizing a reprise of the trip to commemorate its 100th anniversary. Those dreams became a reality on July 22, 2001, when Litwin, then 51, escorted 24 scientists, scholars and artists he had gathered together from across the country onto the cruise ship *Clipper Odyssey* bound from Prince Rupert, British Columbia, to a rendezvous with history.

Called the Harriman Alaska Expedition Retraced, the second voyage set out "to assess a century of environmental and social change," as Litwin put it. "We're seeing this landscape at two moments in time," said William Cronon, a professor of environmental studies at the University of Wisconsin and one of Litwin's "Harriman scholars." "We're seeing it through the eyes of that earlier expedition and we're seeing it now at the beginning of the 21st century, and we're asking: What's the shift?"

The 2001 party took pains to follow the original Harriman route and, like its predecessor, bristled with all the latest gadgetry—GPS mapping, satellite photography and cell phones. But there were differences. For one thing, half of Litwin's expedition was made up of women and Alaska Natives. For another, Harriman Retraced made no bones about doing hands-on science. "A lot of researchers are engaged in important work all up and down the coast," said Lawrence Hott, a documentary filmmaker who accompanied the group. "The idea here is to take a broader look at issues that continue to play out today, just as they did in Harriman's time—boom-and-bust cycles, pollution, wilderness preservation, respect for native cultures."

The 30-day excursion turned out to be a study in contrasts. In 1899, for example, the eminent forester Bernhard Fernow gazed at a great rain forest and announced that it would be "left untouched" because it wasn't commercially viable. When the voyagers of Harriman Retraced visited that same forest, now known as the Tongass, they saw a patchwork of clear-cuts that have enraged conservationists across the country. To C. Hart Merriam and his awed recruits, Prince William Sound looked as pristine as Eden. Litwin's group found it still recover-

ing from the disastrous effect of the 1989 *Exxon Valdez* oil spill. Alaska had changed, and not necessarily for the better.

During the first half of the 20th century, the rugged settlers of the Far North struggled through one bust after another—gold, salmon, copper. Alaska finally struck it rich after major oil deposits were discovered on the Kenai Peninsula in 1957, but by 2001 a new boom was under way: tourism.

When Harriman's men visited Skagway, it was a squalid wilderness outpost overrun with miners. Harriman Retraced witnessed a quite different scene—a "gold rush" theme park overrun with sightseers. "It felt like Disneyland," said a dismayed Kathryn Frost, a marine-mammal researcher with the Alaska Department of Fish and Game.

By 1899, a few steamers had begun transporting tourists to Glacier Bay, much to John Muir's consternation. In 2001, the *Clipper Odyssey* was but one of several dozen cruise ships anchoring there; the total number of passengers that summer exceeded 600,000. "A lot of us who came up here seeking something different are watching Alaska relentlessly becoming just like every other place in the United States," former Alaska governor Jay Hammond told documentarian Hott.

Wildlife, at least, has rebounded dramatically from overhunting in the years before the first expedition. In Yakutat Bay, Edward Harriman bought a pelt said to be that of the last wild sea otter. Litwin's party encountered hundreds of otters, flourishing again thanks to a 1911 protection act and a reintroduction program begun in 1969.

The 2001 scholars (in Kukak Bay) sought "the shift" between Alaska then and now. Kitty Northrup Friedman (with baby), a Harriman descendant, led the return of sacred objects.

Salmon, too, are back. In the years after George Bird Grinnell anguished over their plight at Orca, the fish became so scarce that many canneries went out of business. When Alaska became a state in 1959, it was able to set tough fishing limits that eventually restored teeming salmon runs to many rivers. But by 2001, Bob King, press secretary to then-governor Tony Knowles and a salmon expert in his own right, was concerned that some populations were in trouble again. "This cries out for many of the things Grinnell was saying back in 1899," he said. "We need more scientific inquiry. We need to know what's going on with those fish. And we need stronger enforcement of fishing rules."

Dutch Harbor, the sleepy little village where John Burroughs tried to jump ship, is now one of the most productive fishing ports in the United States; scientists fear it may be undermining the entire Bering Sea ecosystem. The annual harvest of just one species of fish, pollock, exceeds a million metric tons a year. Stellar sea lions, a species in serious trouble, eat pollock. Although many environmentalists insist the way to save sea lions is to limit fishing, experts aboard the *Clipper Odyssey* weren't so sure. "It's probably overly simplistic to think that is going to bring the sea lions back," said Kathryn Frost. "We're feeling very helpless about it. We don't know what to do."

Of all those touched by change in Alaska, no one has been more profoundly affected than its native peoples. Back in 1899, George Bird Grinnell predicted their demise, but in 1971 Congress passed the Alaska Native Claims Settlement Act which, by ceding 44 million acres and nearly a billion dollars, gave the state's some 50,000 Eskimos, American Indians and Aleuts a full stake in its economy and its future. But they wanted more.

Over the years, native-rights activists have fought for the repatriation of cultural artifacts removed without permission from sacred ancestral grounds by scientists and souvenir hunters. So at an emotional ceremony in the same Cape Fox village the *Elder* visited on its way back to Seattle, Litwin and his colleagues presented to a delegation of Tlingit people four totem poles and more than a dozen other items taken from their village in 1899. "It was not just objects but actual ancestors [who] were coming back," said anthropologist Rosita Worl, a Tlingit and expedition member, after the ceremony. "I could feel the happiness and relief of the spirits." Litwin agreed. "It's taken a hundred years to sort through this issue," he said. "Today that circle's been closed."

What, in the end, did Harriman Retraced teach those who went along for the ride? "We learned how to start asking the right questions," Litwin said recently in his office at Smith's Clark Science Center, where he was editing a book about the trip. (*The Harriman Expedition Retraced, A Century of Change* will be published by Rutgers University Press in 2004.) "We saw in Alaska if you stop overexploiting individual species, they'll come back. But what if you're destabilizing an entire ecosystem like the Bering Sea or the Tongass rain forest? Will it come back?" Another question Harriman Retraced taught Litwin to ask is why, in light of what happened in Alaska over the past century, do we continue to treat ecosystems that are essential to our survival in unsustainable ways? "And if the answer is because somebody is making a lot of money, then we have to ask ourselves and our policy makers one final question: Is that a good enough answer?"

—KEN CHOWDER

KIM HEACOX (2)

After nearly two months at sea, Edward Harriman said he didn't "give a damn if I never see any more scenery" and . . . the *Elder* swung around and headed south.

seen, verdant Kodiak, warmed by the Japan Current, was paradise for Burroughs. But Muir was grumpy. "Everybody going shooting, sauntering as if it were the best day for the ruthless business," he complained. Harriman finally found a big bear "eating grass like a cow." He killed it with a single shot, then photographed the animal with her enormous teeth bared.

Even without news of felled bears, life aboard the *Elder* was anything but dull. There were lectures on everything from whaling to Africa and evening musicals with jigs and Virginia reels. One night, Muir, as botanist Frederick Coville put it, "did a neat double-shuffle, immediately followed by [the 63-year-old] Mr. Burroughs, who stepped forward . . . and gave an admirable clog-dance . . . an astonishing exhibition of agility in an old man with a white hair and beard." Forester Bernhard Fernow played Beethoven on the piano. The worthy gentlemen of the Harriman Alaska Expedition even came up with a cheer: "Who are we? Who are we? We are, we are, the H.A.E.!"

George Bird Grinnell said of the natives (Eskimos in Plover Bay, Siberia) he met: "Until the White men came, they lived well."

But when the *Elder* stopped at Dutch Harbor, a peaceful little town on the island of Unalaska, a seasick and cold John Burroughs tried to jump ship. "Mr. Muir and I were just returning to the steamer when we saw John Burroughs walking down the gangplank with a grip in his hand," Charles Keeler recalled. "'Where are you going, Johnny?' demanded Muir suspiciously. . . . [Burroughs] confessed. He had found a nice old lady ashore who had fresh eggs for breakfast." Burroughs said he would wait there while the *Elder* took on the Bering Sea. "'Why Johnny,' explained Muir derisively, 'Bering Sea in summer is like a mill pond.'" Burroughs, said Keeler, "could not withstand Muir's scorn. I carried his satchel back to his room, and . . . he returned to the steamer."

Muir was wrong. With its barren islands and notoriously rough weather, the Bering Sea was not remotely like a millpond, but C. Hart Merriam loved it all the same. He had been there in 1891 to inspect the commercial harvesting of fur seals. Now he waded eagerly onto the desolate rocks of volcanic Bogoslof Island, only to find himself standing in the middle of a "runway" where sea lions weighing as much as a ton thundered down toward the water. "A number of huge yellow bulls, as big as oxen . . . came toward us bellowing fearfully." For a moment Merriam thought "the end had come." Impulsively, he ran toward the sea lions with his camera, and "most took fright and made off."

After the *Elder* anchored at the Pribilofs the next day, the expeditioners tramped across flower-covered fields on St. Paul Island to visit a huge fur-seal rookery Merriam had seen there during his previous visit. But when he caught his first glimpse, he gasped in horror, "astonished," said Burroughs, "at the diminished number of the animals—hardly one tenth of the earlier myriads."

It proved to be a crucial moment. When Grinnell got back to New York, he wrote a passionate editorial in *Forest and Stream* predicting that the beleaguered seals would soon become extinct. Merriam lent the weight of his own considerable influence to a campaign to force the federal government to take action. In 1912, the United States, Russia, Japan and Canada finally agreed to impose limits on seal hunting. The treaty they signed, the first international agreement for protecting wildlife, grew out of the Harriman party's visit to the Pribilofs.

After nearly two months at sea, Edward Harriman said he didn't "give a damn if I never see any more scenery" and declared himself ready to go back to work. The *Elder* swung around and headed south. But on its return, the ship made an unscheduled stop opposite St. Mary's Island at a Tlingit village near Cape Fox. There the expedition members saw a dozen or so magnificent totem poles towering over a collection of seemingly abandoned houses on the sandy shoreline. "It was evident the village had not been occupied in . . . years," said Burroughs. "Why not, therefore, secure some of these totem poles for the museums of the various colleges represented by members of the expedition?"

The artist Frederick Dellenbaugh described what happened next: "A gang started to take down some of the totems and as they were twenty to forty feet high, and three or more [feet] in diameter at the base, this was no light task. I heard a great deal of tugging and fuming. . . . When I got through my sketch I went over and helped. We found it pretty hard

SMITHSONIAN INSTITUTION ARCHIVES, RECORD UNIT 7243

"Those who thought of Alaska as untouched wilderness," said biographer Maury Klein, "were surprised by the expedition's evidence of how much it had already started to change."

work to move the next one even with rollers and tackle fastened to the rocks seaward and twenty men pulling. It was very hot on shore. And I was thoroughly warmed through for the first time since leaving Seattle."

John Muir was hot, too—about the totems. As far as most of the scientists were concerned, they were merely gathering artifacts; to Muir, it was pillaging plain and simple. Disgusted, he stomped off. When Edward Curtis took a celebratory photograph of the whole party, with their trophy totems in the background, the angry Scot refused to pose.

The day after the *Elder* reached home port at the end of July, with 100 trunks full of specimens, the *Seattle Post-Intelligencer* fairly beamed its approval. "All things favored Mr. Harriman in carrying out his plans for the greatest junket probably in the history of the nation. . . . The scientists . . . ransacked the water below, the lands about, and the heavens above for swimming, creeping, and flying things, named and nameless. When the Elder landed in Seattle yesterday morning, she resembled a floating curiosity shop."

By the time the Harriman Expedition steamed past Juneau, local gold mines had already begun to scar the pristine landscape.

Not to be outdone, the Portland *Oregonian* chimed in: "No more able group of scientists has set sail on a voyage of this kind in recent years. Mr. Harriman has done his country and the cause of human learning a signal service."

The expedition's treasures were destined to become the basis of major collections at the Smithsonian and other leading institutions, including Harvard University, the Field Museum in Chicago and the University of Washington. Harriman's scientists described 13 new genera and nearly 600 new species, as well as many fossil species. The artists had made more than 5,000 photographs and paintings of plants and animals, natural wonders and native peoples. The coast of Alaska was a mystery no more.

The expedition's importance "created a picture of a place that was still largely unknown to most Americans," says Harriman's biographer, Maury Klein. "Those who thought of Alaska as untouched wilderness, only slightly blemished by the gold rush and the cannery business, were surprised by the expedition's evidence of how much it had already started to change." Robert Peck, a fellow of the Academy of Natural Sciences of Philadelphia, believes "those scientists were among the first to struggle with how to balance the pristine nature of Alaska's wilderness with the world's demand for its resources. Together they created a baseline of information that is still used today."

Jim Bodkin, an otter specialist who works for the U.S. Geological Survey in Glacier Bay, is one of the users. "Science is a process of building upon knowledge that has been gathered in the past," he says. "And so it's absolutely essential for us to have the information those prior scientists made available. What we do today is based on what they did a century ago."

At journey's end, John Burroughs happily resumed rusticating in his beloved Catskills, but for other expedition members there would be no return to the status quo. When Harriman decided to gather the expedition's scientific findings into a book, he turned once again to Merriam and asked him to be the editor. The old biologist spent the next 12 years working on the "book," which grew to an astounding 13 volumes before it was finished.

George Bird Grinnell went back to New York City and devoted much of his considerable energy to crusading in *Forest and Stream* for the conservation of Alaska's wildlife. Edward Curtis devoted the rest of his life to photographing the vanishing tribes of North America. He took more than 40,000 images, reproducing many of them in his monumental 20-volume work, *The North American Indian*.

John Muir's improbable friendship with Edward Harriman paid off in 1905, when the intrepid wilderness advocate was struggling to get part of Yosemite Valley protected as a national park. He asked Harriman for help, and the railroad man's powerful lobbying in the U.S. Senate enabled the Yosemite bill to pass by a single vote. Harriman's power continued to grow in the years after the Alaska expedition. He merged the Union Pacific and Southern Pacific railroads, but then an antitrust suit pulled them apart. Although that suit helped turn public opinion against Harriman, Muir stuck by him. When Harriman died in 1909, it was Muir who wrote his eulogy. "In almost every way he was a man to admire," he said. "I at last learned to love him." ○

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Beach Lady

MaVynee Betsch wants to memorialize a haven for African-Americans in the time of Jim Crow – BY RUSS RYMER

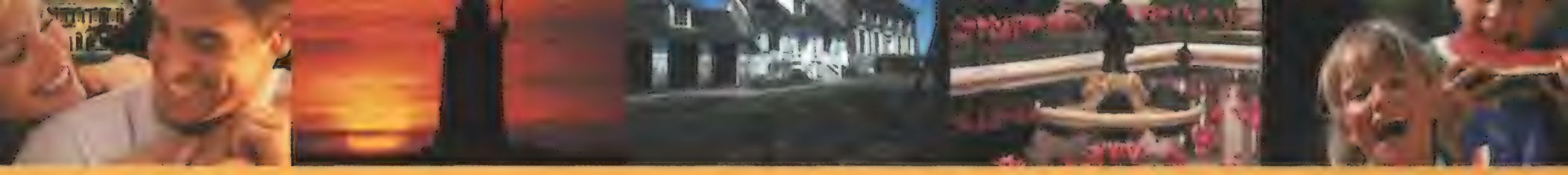
"They stuck together and created a world without outside help," says MaVynee Betsch of her forebears and the once-thriving, all-black Florida community resort they built.

"Hello," I heard the cultured, worldly and refined voice say on the answering machine. "This is the Beach Lady. If you're getting this message, it may be because I have turned into a butterfly and floated out over the sand dune."

WHEN I TELEPHONED my friend MaVynee Betsch in American Beach, Florida, recently, I got her answering machine. It would be hard to overstate my amazement. An answering machine! In all the years I've known MaVynee, she's never even had a home telephone. Actually, for many of those years, she didn't have a home. She resided sporadically in a donated trailer or in loaned basement rooms, but primarily (and willfully) on a chaise longue on the beach. Now, at the firm insistence of family and friends, she has moved into a small apartment, got herself listed with directory assistance and given up her nomad ways. Or maybe not. "Hello," said the voice on the tape. "This is the Beach Lady. If you're getting this message, it may be because I have turned into a butterfly and floated out over the sand dune."

That's MaVynee: defying gravity, determinedly whimsical in the face of adversity and diminished fortunes. She was not always a hermit at the beach. She was raised in one of the preeminent black families in the South and was educated at the Oberlin Conservatory of Music in Ohio. She studied voice in Paris and London, and sang opera throughout Germany during the mid-1950s and early '60s in concert halls where she is still remembered four decades after she quit her glamorous career because she felt herself called home to Florida. She jettisoned more than her diva status. She also gave away her significant inheritance, writing checks to conservation causes until the money ran out in the late 1970s, with the intangible compensation that a textbook on butterflies is dedicated to her and an Atlantic-traveling whale has

ALL: BUD LEE



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been given her name (MaVynee #1151) by biologists at Boston's New England Aquarium. If MaVynee does indeed decide to float off as a butterfly, she certainly won't lack for credentials.

In spring 2002, MaVynee was diagnosed with cancer, and surgeons removed her stomach. That triggered her family's insistence that she finally move indoors. In the fall came worse news: her cancer had recurred and spread, and doctors said she might have only months to live. That's why I was calling. When MaVynee heard my voice, she picked up the phone (MaVynee, already screening her calls!), but she didn't want to linger on her health. She wanted to discuss her plans. MaVynee intends to start a museum.

The institution MaVynee envisions will contain the history of American Beach, the town where she's lived many of her 68 years. American Beach is on Amelia Island, nearly 40 miles north of downtown Jacksonville on the Atlantic Coast. It was built in the 1930s by Florida's first insurance company, the Afro-American Life Insurance Company, at the behest of its president, Abraham Lincoln Lewis, Florida's first black millionaire. For decades it flourished as an ocean-side paradise for blacks from around the country, who admittedly had little choice. "When we were children, could we go to the beach just anywhere we wanted?" MaVynee asks the college kids who come through town on buses for history tours. "Uh-uh. No . . . way . . . José!" Her voice is as cultured, worldly and refined as you'd expect a former opera star's to be, and her carriage so regal that when she sits on her busted plastic beach chair on the borrowed sundeck of Abraham Lincoln Lewis' old home (the oldest house on the beach), you would think that she owned the place. Which in a way she does: A. L. Lewis was her great-grandfather.

Many of those visiting the Beach in its heyday were likewise illustrious—writer Zora Neale Hurston, heavy-

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Barred from white resorts, blacks built their own (above, American Beach 1950).

weight champion Joe Louis, entertainer Cab Calloway and civil rights leader A. Philip Randolph among them. But most were ordinary working-class African-Americans who came to enjoy (as the Beach's advertisements phrased it) "relaxation and recreation without humiliation." The town retains even today that democratic mix. It is the home of one of the first black graduates of Mount Holyoke and the first black Florida supreme court justice since Reconstruction. And it is also the home of ordinary folks. "See that house?" MaVynee asks visitors. "A maid lives there. And a postman lives over there. Where else in America do maids own beach homes?"

American Beach was born in a time when black life was dominated by the strictures of Jim Crow. Shut out from the white economy, African-Americans created their own, and in Philadelphia and Atlanta and Los Angeles and most other major American cities, they lived and shopped in a separate universe parallel to the white one nearby. Jacksonville had its own thriving black stores and restaurants, factories, newspapers, banks, insurance companies and hospitals and, as a direct consequence, its own black professional establishment. If that establishment was wealthy and educated, it was also invisible to most whites, who tended to

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think of black people as entertainers, criminals or "the help." The black middle class even vacationed out of white sight, in resorts like Oak Bluffs on Martha's Vineyard and Val Verde outside Los Angeles. And American Beach.

Most of those places have languished—after the demise of segregation, they weren't needed the way they once had been, and the businesses that created and fostered them closed as well. The Afro-American Life Insurance Company shut its doors in 1991, and what's left of American Beach, with fewer than 25 year-round families, doesn't even make an appearance on many Florida maps. Most of its homes are aging and modest; a few of the grandest have been torn down. And its businesses—the nightclubs, hotels and restaurants that used to throb with activity all summer night—are boarded up.

Betsch's museum would include artifacts such as this c. 1950 license plate holder.

There are many who think American Beach will not be around much longer, considering the pressure from rich developers. Eight years ago, a large section of property that had once belonged to the Beach, including a giant sand dune that dominates the town, was sold to Amelia Island Plantation, one of the multimillion-dollar golf and vacation resorts that are American Beach's neighbors. MaVynee vehemently opposed the sale—we are talking, after all, about the same dune over which she envisions flapping her butterfly wings. She calls it NaNa and grieved its loss as though the dune were a member of her family. The resort preserved it and built a golf course on much of the land behind it.

If this all makes the idea of an American Beach museum seem quixotic, add the melancholy fact that the museum's main advocate is herself a

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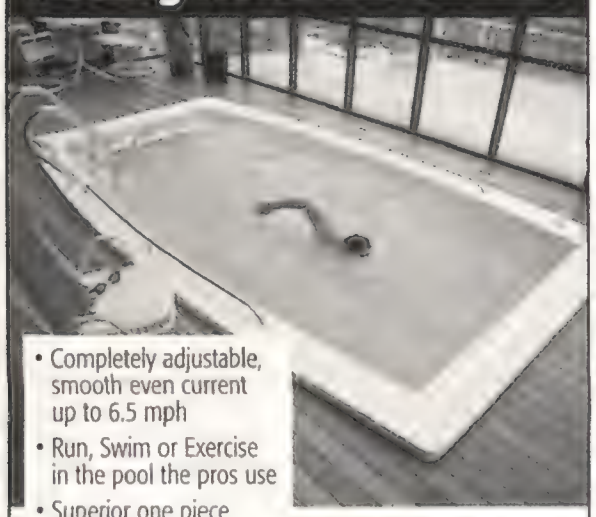
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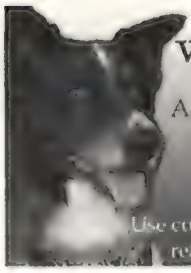
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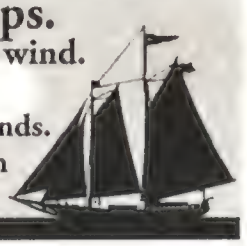

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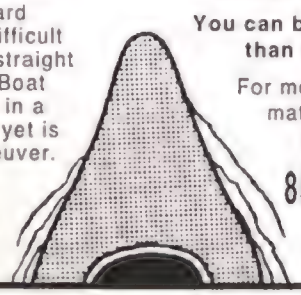

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Her colorfulness attracts children. "They come to see my hair," she says mischievously, "and I give 'em a little history."

veritable pauper. MaVynee's minimal rent is paid by her sister in North Carolina and her medical bills by Social Security. Friends pony up for her pharmacy and phone bills. But those who know her know never to bet against her. In whatever celestial gambling den museum futures are traded, the museum at American Beach may be listed as a long shot. But the smart money's on the Beach Lady. After all, MaVynee has a way of beating the odds.

Case in point: NaNa. This year, Amelia Island Plantation, MaVynee's old antagonist, made arrangements to transfer the sand dune, in MaVynee's honor, to the National Park Service. MaVynee's friends wanted to present the news to her as a surprise on her birthday this past January 13, but they discovered that the transfer required, literally, an act of Congress. Now, Representative Ander Crenshaw and Senator Bill Nelson, both of Florida, have come to the rescue; they are introducing the necessary legislation.

The schoolchildren of American Beach have a theory about MaVynee's magical ability to prevail—they whisper that she's a shaman or a witch. Their evidence is her appearance: her fingernails are very long—until they got clipped in the hospital, those on her left hand spiraled to more than a foot and a half. Her hair, coiffed into a wheel over her head, cascades in graying dreadlocks down her back and past her ankles. Her hair and clothes are festooned with political buttons, unfailingly radical and generally funny, most expressing her commitment to social and racial justice, ecological causes and

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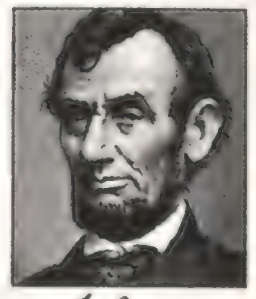

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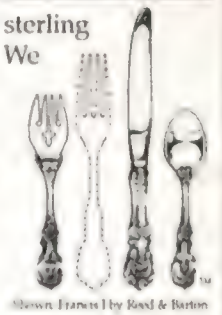

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vegetarianism. Her colorfulness acts as a mighty come-on, especially for children. "They come to see my hair," MaVynee says mischievously, "and I give 'em a little history."

It's a history that's been lost to the larger world and even to the younger generation of blacks. The museum MaVynee envisions would reverse that invisibility and highlight the culture of Abraham Lincoln Lewis' generation. "It's awesome," MaVynee says, "how they stuck together and created a world without outside help." The message transcends the artificial boundary of "black history," she says. In this era of corporate scandal, Americans are debating the obligations of the business world and its leaders to society. No group has confronted those questions more directly than did the black businessmen of A. L. Lewis' generation, who felt an explicit obligation to "uplift" their community.

Herself a vivid relic of that great history, MaVynee has collected many other relics to start her museum: old license plate holders that advertise "Negro Ocean Playground," Afro-American Life Insurance Company ashtrays that vow "A Relief in Distress," and a wealth of papers, including 19th-century land deeds and stock certificates and such manuscripts as A. L. Lewis' speech before Booker T. Washington's National Negro Business League. For years MaVynee kept her stash in milk crates, stored out of the rain in her various way stations. She hopes that a formal repository for such treasures will encourage others who experienced the Beach's history to contribute their keepsakes and records.

Prospects for the museum at American Beach are looking rosy. The county is providing a room in a new community center on the outskirts of town. A committee that includes historians and museum directors hopes to expand MaVynee's trove and to raise $500,000 in funds. Says Rowena Stewart, former executive director of the American Jazz Museum in Kansas City: "We are planning for photographs, signs, posters, clothing of the period—any artifacts we can use to re-create, in this small space, the experience of being at the Beach during the time when its role was so crucial. And we are tape-recording the recollections of the early residents for an oral history archive."

"I know I'm blessed," MaVynee says, "because anytime anything bad happens to me, something good comes out of it. I swear sometimes I think my great-grandfather is looking out for me." He may be at that. MaVynee's most recent checkup showed the fast-moving cancer stalled in its tracks, and a mystified physician told her that if she keeps on like this, he'll have to revise his prognosis. She's beating the odds once again, it seems, and her many friends hope that her floating butterfly days are far ahead of her. ○

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THE SPECKLED MONSTER: A HISTORICAL TALE OF BATTLING SMALLPOX

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Families began inoculating children against smallpox (above, France, c. 1820); the experimental procedure saved countless lives.

IN THESE DIRE DAYS, when fear of epidemic is great, it seems peculiar to have found pleasure in reading a book about smallpox in the 18th century, early attempts at inoculation and two heroic figures who were both survivors of this terrifying disease.

The Speckled Monster: A Historical Tale of Battling Smallpox by SMITHSONIAN contributor Jennifer Lee Carrell is the highly engrossing story of an English aristocrat, Lady Mary Wortley Montagu, and a Boston physician, Zabdiel Boylston, whose scarred faces showed they had survived the disease. Neither one invented inoculation—a precursor to vaccination that used active smallpox cells to invoke a milder strain of the disease—but they were crucial catalysts in a time when European medicine was helpless against the disease but loath to admit it.

The book illuminates the lives of the two pioneers who were both determined to prove that methods of inoculation could work. Hidden in the unrecorded history of folk medicine of the Middle East, the Caucasus and Africa were vital clues to successful precautions taken by the local people to defeat smallpox. Oral accounts came to the attention of Lady Mary, once a great beauty, who wore a silken veil to hide her pitted face, and the stubborn and courageous American doctor. Both had their own children inoculated, knowing the risks involved.

Carrell eloquently evokes the world inhabited by these two brave figures. There are descriptions of flowers, dresses, neighborhoods, menus and superstitions. She even found out what curses would have been hurled against the doctor in Boston. "Raw Head and Bloody Bones," a mob howled outside the Boylston house, throwing pebbles, rotten fruit and eggs. They thought his inoculations were demonic and called him a murderer. Another Boston doctor called him "illiterate, ignorant, confused, rash, mischievous, negligent, inconsiderate." Boylston had successfully inoculated his little son Tommy and two slaves. One of the myths about inoculation was that it did not produce a true smallpox in the patient but a spurious case of chicken pox. Zabdiel knew better.

To inoculate, Dr. Boylston first pricked a pustule on the body of a smallpox victim and deposited the fluid in a vial he carried around his neck. After lightly cutting the skin of a patient he mixed a drop of blood with a drop of the fluid, which he applied with the point of a quill. The wound was bandaged and the patient then showed symptoms of the disease before recovering, usually without scars.

The book begins with the life of the privileged and intelligent Lady Mary Wortley Montagu. During her illness, surgeons arrived to "bleed" her in the belief this would clean the poison in her blood. When at last she looked at her face in a mirror, it was not recognizable.

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After her husband was appointed British ambassador to the Ottoman Empire, a new, happier life began for Lady Mary. She studied Turkish poetry, music, cookery and the language. She learned how Turks protected themselves from smallpox. The process was called engrafting. On March 18, 1718, the chief Inoculatress of Constantinople, veiled from head to toe in black, inoculated Lady Mary's small son Edward, who recovered nicely.

It was Edward Jenner, an Englishman, who would, in 1796, use cowpox to inoculate against smallpox. The word "vaccination" is from *vaccinnia*, the Latin term for the cowpox virus. "It was as if an angel's trumpet had sounded over the earth," an admirer said. In this splendid book we learn how two people fought ignorance by taking enormous risks. Carrell tells this gripping story with ardor and skill.

Reviewer GLORIA EMERSON'S *most recent book is the novel* Loving Graham Greene.

HAUSSMANN: HIS LIFE AND TIMES, AND THE MAKING OF MODERN PARIS

BY MICHEL CARMONA
TRANSLATED BY PATRICK CAMILLER

IVAN R. DEE. $35

PARIS, still arguably the world's most beautiful and livable metropolis, has not been lucky lately. During the early 1970s, the construction of the Maine-Montparnasse skyscraper, on the Left Bank, blighted the city's hitherto harmonious center. In the 1980s and '90s, President François Mitterrand presided over the addition of other atrocities, including the new opera house—a soulless, clunky box—and the dysfunctional Bibliothèque Nationale, where books, stored in the library's glass towers, are vulnerable to sunlight and heat.

The mid-19th century renovation of Paris, under the leadership of Georges-Eugène Haussmann (a sort of French Robert Moses), offers an inspiring

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counterpoint to these late 20th-century depredations. In his eminently readable biography, Michel Carmona surveys Haussmann's herculean campaign, an effort that ultimately transformed a medieval warren of dark, slum-filled streets and alleys into the airy City of Light with its tree-lined boulevards and handsome apartment buildings.

Carmona, a professor of urban planning at the Sorbonne, points out that Emperor Napoléon III (who reigned from 1852-1870 and was the nephew of Napoléon I) actually came up with most of the ideas for renovating Paris. It was he who drew up a color-coded map of the city, outlining his ideas for opening clogged thoroughfares, cleaning up squalor, and creating schools, hospitals and public parks such as the Bois de Boulogne. Haussmann, a career civil servant, would serve as the emperor's main functionary in remaking the city.

A descendant of German Lutherans who settled in Alsace in the 16th century, Haussmann was born in 1809 in a Paris house that would be demolished during his renovation. After law studies, he opted for the civil service. In 1853, Napoléon III appointed him prefect of the departement of the Seine, making him in effect mayor of Paris.

Over the next 17 years, Haussmann razed much of the city. He laid out 12 grand avenues radiating from the Arc de Triomphe. He doubled the supply of drinking water, modernized the sewage system and rebuilt ten bridges. In the process, he dislodged 350,000 people. Most were poor families driven from slums to the suburbs. "The new Paris is made for people with money," Carmona writes. Unlike in most large American cities, those who can afford to, still live in the center of Paris; those who cannot are consigned to the suburbs.

The author gives short shrift to the heartbreak of social upheaval on such a huge scale. But lovers of Paris will find Carmona's chronicle a treasure-house of urban lore. ○

Reviewer JOSEPH HARRISS has lived in Paris for 41 years.

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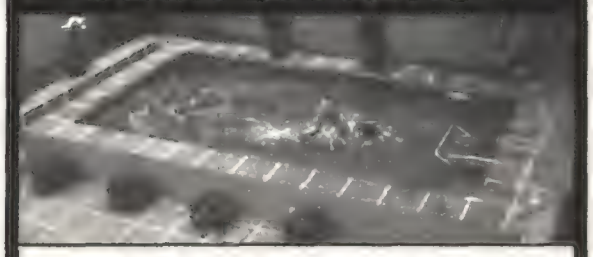

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Coalition of the Differing

It took Margaret Mead to understand the two nations separated by a common language ~ BY PATRICK COOKE

RECENT EVENTS ASIDE, the Americans and the British have not always seen eye to eye—neither in war nor wardrobe. In fact, during World War II the U.S. and British commands had such a terrible time communicating with one another that in 1943 they commissioned anthropologist Margaret Mead to determine why. The Americans complained that the British were secretive and unfriendly; the British insisted that the Americans were simpleminded and boastful. The allies argued about everything.

Mead discovered that the two cultures possessed fundamentally different world views. One simple way to demonstrate this was to ask an Englishman and an American a single question: What's your favorite color? American servicemen quickly came up with a color, but the British asked, "Favorite color for what? A flower? A necktie?"

Mead concluded that Americans, raised in a melting pot, learned to seek a simple common denominator. To the British, this came across as unsophisticated. Conversely, the class-conscious British insisted on complex categories, each with its own set of values. Americans interpreted this tendency to subdivide as furtiveness. (After all, a person who can't name a favorite color must be hiding *something*.) "The British show an unwillingness to make comparisons," Mead wrote. "Each object is thought of as having a most complex set of qualities, and color is merely a quality of an object."

Windsor (1967) models British complexity.

The allies eventually overcame their differences and rallied to defeat Hitler, but for decades afterward you could see Mead's revelations reflected in the men's fashions of Britain and America. For Yanks what mattered was an overall "look." An American boy learned from his father, his schoolmates and ads for Hickey Freeman suits that the goal was to combine elements that complemented one another: *the tie goes with the jacket, the shoes go with the belt.* To the British, on the other hand, what mattered more than the whole was its parts. Where a postwar American male might have been neatly described as "the man in the gray flannel suit," an Englishman of the same era was "the man in the gray flannel suit—also wearing plaid socks, a striped shirt, paisley tie and checked jacket with a floral handkerchief in the pocket."

Note the famous 1967 Patrick Lichfield photograph of the Duke of Windsor in which the abdicated king appears in almost precisely this outfit. To the duke, each piece of clothing no doubt had, as Mead observed, its own "complex set of qualities" having nothing to do with the others. And yet, was there another gentleman of this era who more exemplified British sartorial style? (He even gave his name to the Windsor knot.)

It is impossible to say just when these national dress codes began eroding, but by the turn of the millennium they were gone. One night in London not long ago, I was walking back to my hotel (near Savile Row) when I saw framed through a pub window a group of lads standing together at the bar. They might as well have been college kids in Atlanta, or Barcelona, or Moscow; there was not a single sartorial clue that identified them as English. They projected what might be called an "urban" look, the bland, shapeless offering from brands such as Banana Republic and J. Crew. To wit, an untucked shirt, a one-size-fits-all sport coat and baggy trousers rolled up above black, square-toed shoes as big as the boxes they came in. What would dear Margaret Mead have made of this snapshot? Probably, that much of the men's world has a new style, one that reflects not tribal differences but global similarities.

But let us not despair. After all, men's fashion history does have a way of turning out surprises. Take, for example, this past January's menswear shows in Milan. One of the most startling moments came when designer Miuccia Prada launched a male model down the runway wearing a loud print shirt, striped pants and a wild patterned tie, all topped off with a checkerboard 1970s Bear Bryant hat. It was a rig that would have made the Duke of Windsor proud.

SIR PATRICK LICHFIELD / VOGUE CONDE NAST PUBLICATIONS

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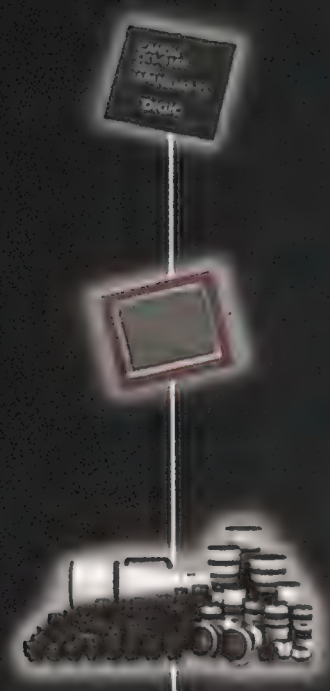

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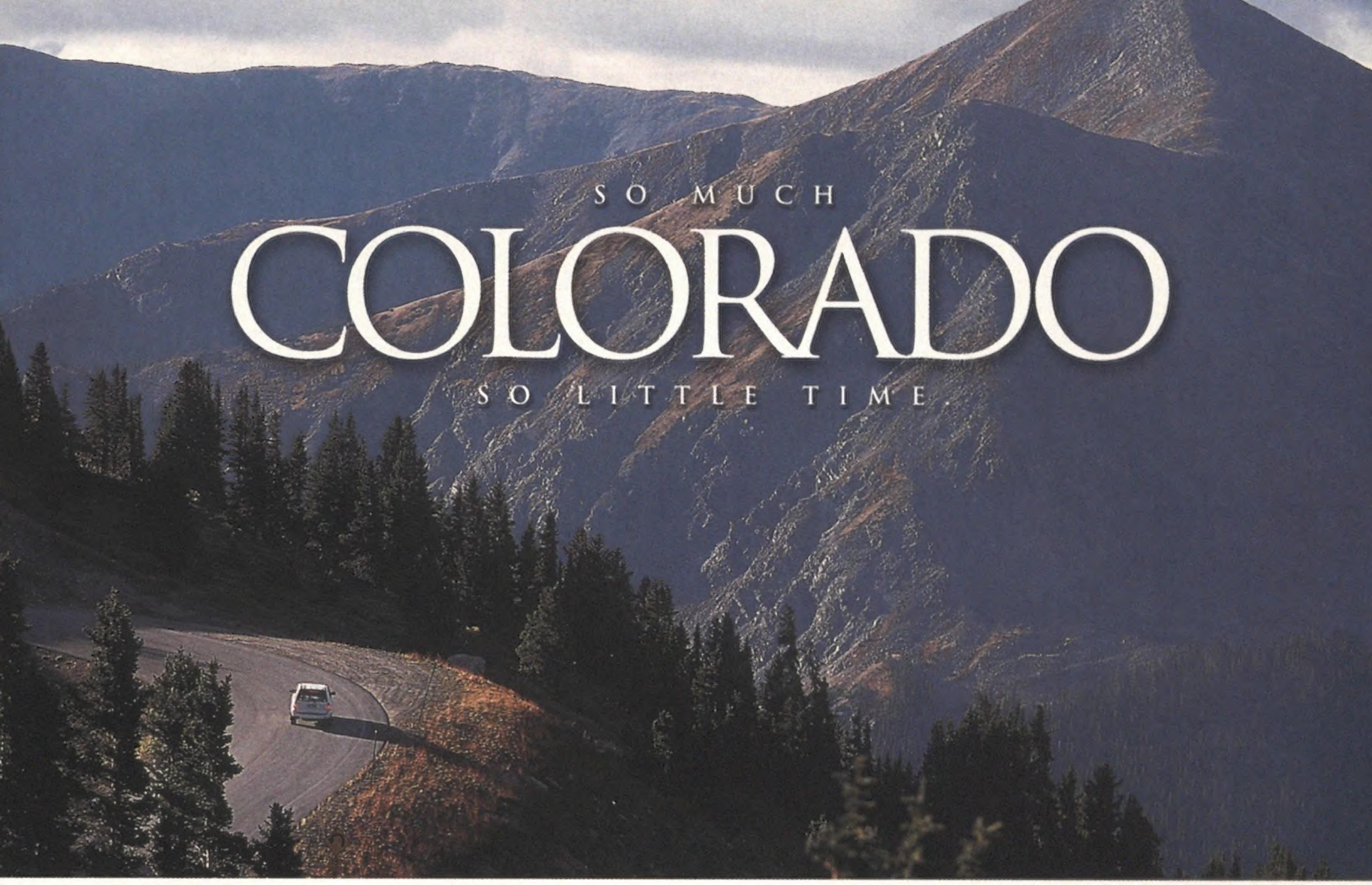

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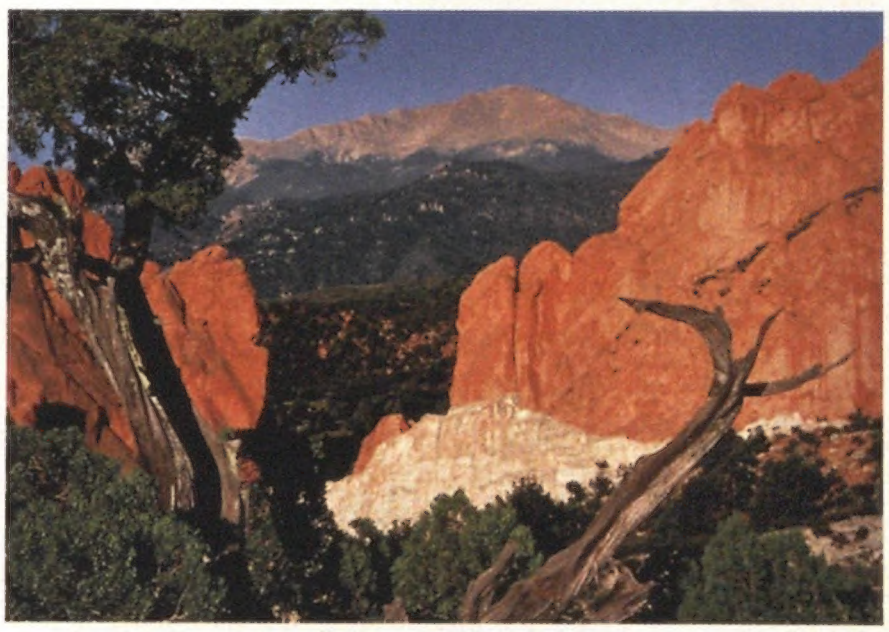

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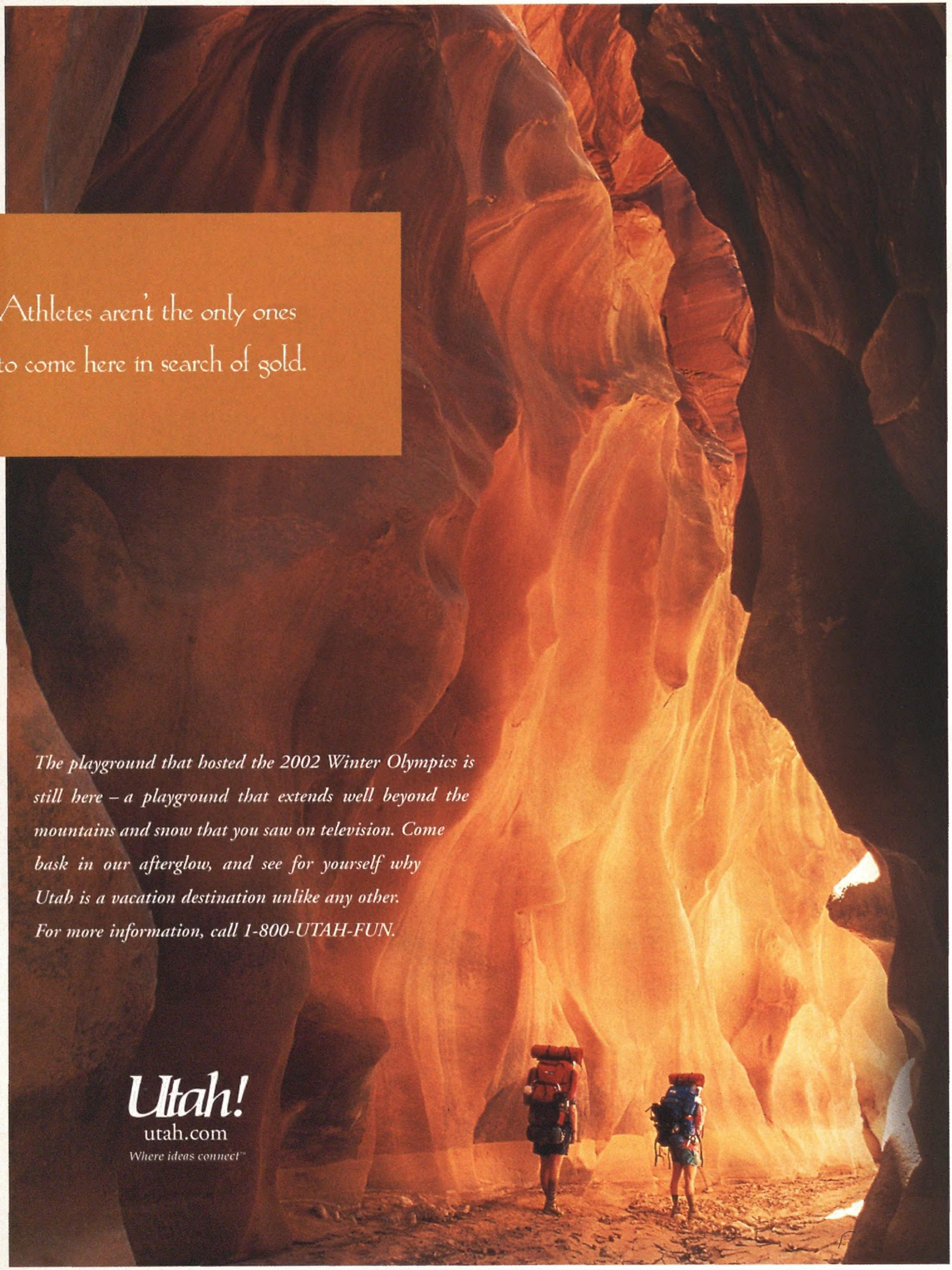
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fig.1
redwood

fig.2
maple

fig.3
extinct flower

The Davenport Hotel is a Spokane landmark. Established in 1914, it was re-established in 2002 after a $30 million renovation. Famous past guests include President Taft, President Hoover, Charles Lindbergh, Amelia Earhart, Douglas Fairbanks and Will Rogers.

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